THE EFFICACY OF ONE AFTER SCHOOL PROGRAM IN RAISING READING SCORES IN EIGHT NORTHERN BRITISH COLUMBIAN'S VULNERABLE SCHOOLS

by

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Abstract

Elementary schools in Northern British Columbia with vulnerable populations are facing a decline in the academic achievement rates of their students. School districts facing these challenges are focusing their initiatives on intensive interventions to reduce and eliminate the achievement gap affecting the vulnerable populations. The After-School Academic Proficiency (ASAP) Program was a pilot project introduced to eight elementary schools with populations that were deemed vulnerable. Reading data collected from a school district located in Northern British Columbia determined that 49% of Grade 2 students were not meeting expectations. As a result of this data, the school district implemented mandatory programs in its most vulnerable schools to meet the needs of their learners. This quantitative study employed a quasi-experimental design to compare pretest and posttest data collected from the Benchmark Assessment System (BAS) to determine if attendance in the ASAP program had a significant effect on the reading levels of the participants. Fountas and Pinnell's Levelled Literacy Intervention (LLI) System was utilized to provide intensive reading interventions to 102 students in Grades 1, 2, and 3, who attended the ASAP program. The data was analyzed with ANOVA to determine if there were a significant difference in the reading achievement scores between grade levels or site locations. A paired *t* test was then used to analyze the effects of the after school program on the reading achievement of all the participants in the study.

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Glossary

In this Glossary, I have added terms that are pertinent to this study.

ASAP – After School Academic Proficiency Program. Intentional intervention and cultural programming after school three days a week for thirty two weeks including academic intervention in literacy and numeracy, cultural programming, health and nutrition and mindfulness (Framework for Enhancing Student Learning, 2018).

BAS – Benchmark Assessment System. The *Fountas and Pinnell Benchmark Assessment Systems (BAS)* evaluates student reading and comprehension ability with reliable and robust universal screening that is aligned to the *Leveled Literacy Intervention System,* to determine each child's instructional level for guided reading according to the Fountas and Pinnell Text Level Gradient (Heinemann, 2012).

CAIS – Comprehensive Academic Intervention Strategy. A reading intervention program implemented in Community Link schools that follows a mandatory reading curriculum and provides reading interventions using the Fountas and Pinnell LLI program to provide direct service to the three lowest students in the classroom from Grades 1, 2, and 3, also including Kindergarten in the Spring term.

Community Link Schools – schools with a significant percentage of students deemed vulnerable based on information obtained from the Ministry of Children and Families and other relevant information.

EDI – Early Development Instrument. Measures the developmental health of the kindergarten population across the province. Used for community mapping to determine where resources are needed to support students and families.

HELP – Human Early Learning Partnership is a collaborative, interdisciplinary research network, based at the University of British Columbia that brings together many scientific viewpoints to address complex early child development (ECD) issues.

LLI – Leveled Literacy Intervention. A small group reading intervention program developed by Fountas and Pinnell (2016) designed for children who find reading and writing difficult. LLI is designed to bring children quickly up to grade-level competency in reading and writing.

Chapter 1: Introduction

Twenty-first century schools are continuing to evolve to meet the needs of their learners to ensure that funding, resources, and supports are available to those that need it most. Schools with vulnerable populations are challenged with the task of students that require additional supports to succeed academically. Struggling readers become struggling students as the shift from learning to read to reading to learn occurs. Current research on reading has shown that early intervention can significantly decrease the number of students with reading difficulties (Partanen & Siegel, 2014).

The focus of this project was a quasi-experimental study that investigated the pretest and posttest reading scores of students to determine if attendance in an after-school program had an effect on the reading scores of the participants. The After-School Academic Proficiency (ASAP) Program was a pilot project initiated in eight elementary schools in Northern British Columbia, and was designed to provide intentional intervention and cultural programming in literacy and numeracy, cultural programming, health and nutrition, and mindfulness. The program ran after school, three days a week for 32 weeks. For the purpose of this project, only fall pretest and spring posttest reading scores of participants who attended in the first year of ASAP program pilot in 2017-2018 were analyzed, as that is the only year with complete pretest and posttest data.

The ASAP program utilized the Fountas and Pinnell (2018), *Levelled Literacy Intervention* (LLI) system. Reading achievement was measured using the Benchmark Assessment System (BAS) which combines fluency and comprehension scores to determine a student's reading level. The BAS is considered to be a reliable and valid measurement tool for accurately measuring a student's reading level. The reliability of the BAS as a valid measurement tool was determined by an outside team of three independent researchers. To

determine the test-retest reliability of the BAS, the students' reading scores on fiction books were correlated with their scores on non-fiction books. To determine validity, the assessment outcomes on the BAS were compared to other tests that purport to measure reading levels (Heinemann, 2012). Participants in the ASAP program received 30 minutes of reading intervention, three times a week. The effect of the ASAP program on the reading achievement of the participants was determined in this study using a quasi-experimental pretest and posttest design.

Significance of the Project

If the data show that there are significant gains in the reading scores of the participants, the analysis of the data from this project could provide valuable information to the school district on the efficacy of the program, which would also be useful for other school districts that may be seeking new initiatives to support their vulnerable learners. Other educators may use the data to develop their own reading intervention programs. The data obtained in this study could be used to develop the selection process of applicants within the program. There is also a fiscal and moral responsibility to the students, parents, and school district to ensure that the program does in fact have an impact on the reading achievement of the participants. Parents and students need evidence that this program is in fact successful in raising the reading scores of the participants. The results of the project could add to the current literature about the efficacy of after school programs in providing reading interventions and raising the reading scores of the participants.

Problem Statement

The problems facing school districts, including the one that I teach in, with students not meeting expectations in reading and other subject areas are not unique. Countless schools across

Canada and the United States are facing the same challenges in schools with vulnerable populations (Collins, 2015; Evans, 2005).

As explained further in the next chapter, many school districts are looking for innovative ways to extend the school day and provide the necessary interventions to support learners. The ASAP Program is in its second year of implementation. This current research project examined the reading scores data to determine if participation in the ASAP program had a significant effect on the reading scores of the participants. The school district had included the ASAP Program as one of its achievement strategies in its Strategic Plan for 2016-2021. "Ongoing program evaluation and improvement is a promising practice that helps hold programs accountable to high quality standards; allows programs to reflect, reassess, recalibrate and further develop and improve upon their program content and service delivery" (Taking a deeper dive, 2014, p. 22).

Personal Location

I am currently a Kindergarten teacher with 29 years of teaching experience from Grades Kindergarten through to Grade 6 in Northern British Columbia. The majority of my career has been spent in inner-city schools. My passion and love is for Kindergarten but my experience in other grades has given me a better understanding of the learning continuum with respect to reading. As an educator, I am seeing a decline in the number of children who are coming to school ready to learn. The youngest learners are entering the school system with a decrease in fine motor skills, social skills, and phonics and an increase in social emotional, trauma and mental health issues (Ridgard, Laracy, DuPaul, Shapiro, & Power, 2015). These issues are only magnified in the Community Link schools that house our most-vulnerable learners and many of these students are already behind before they start. In response to these trends, teachers have had to change the way that they teach and shift the focus in the early months of Kindergarten from an

academic to a social emotional focus. Educators now have to teach students how to be learners before formal teaching can begin. Many of our students that are behind academically in Kindergarten are also behind in Grade 1 and Grade 2 and as they get older, the gap continues to widen (Caro, McDonald, & Willms, 2009).

As a Kindergarten teacher in a Community Link school I have a vested interest in Education that supports our learners. My current school is also one of the ASAP site locations. While I currently teach in one of the site locations, I do not have any involvement with the daily programming of ASAP in my school. I was, however, involved with the selection process of potential candidates in the first year of the program.

Purpose of the Study

The purpose of this project was to determine the effects of participation in an after-school program on the reading achievement of students in Grades 1 to 3 who received interventions using the Fountas and Pinnell LLI system. A quantitative study method was used as they analyze data using tests of significance (Creswell, 2012). The independent variable was participation in an after-school program. The measure for achievement was determined by the significant difference between the pretest and posttest data. The dependent variables were the pretest and posttest reading scores of the students in the ASAP program. The reading scores were obtained using the Fountas and Pinnell's Benchmark Assessment System (BAS). The BAS was the assessment tool of the LLI system. The validity of the BAS as a reliable measurement tool is further explored in Chapter 3.

Background to the Project

The school district selected for this study is located in Northern British Columbia. It is a natural resource community where logging, pulp and paper, forestry, and mining are the major

industries and employers. There are eight schools located within this northern community that face unique challenges because of their high population of students that have been defined as vulnerable according to the Ministry of Children and Family Development Social Services Index. Of the 1 572 schools in British Columbia, five of the schools in this northern community school district are in the top 50 most vulnerable (District Achievement, 2018).

In the school district, Community Link schools are the schools that have a significant population of vulnerable students. The school district considers a number factors in determining which schools have the highest population of vulnerable students. According to a PowerPoint presentation given to district principals at the District Board Office in 2013, the district considers low income measures, involvement with social services and its related agencies, community mapping information, and socio-economic demographics such as Aboriginal Ancestry to determine the proportion of the school population that is considered vulnerable. Within the Community Schools umbrella, there are two tiers of elementary schools. There are five Tier 1 schools that have the highest percentage of at-risk students as determined by the Ministry of Children and Families. They include students who are either in care or who are living in families on income assistance and three Tier 2 schools who have the next significant number of at risk students. Tier 1 schools receive funding for a Community School Coordinator and all eight schools receive Community School funds that are used to support at-risk learners (C. Heitman, personal communication, April 13, 2013).

At the very first staff meeting of the 2017-2018 school year the teaching staff of the Community Link schools were informed of the District Data that 49% of Grade 2 students were not meeting expectations in reading (District Achievement, 2018). Although this news overwhelmed staff it was reassuring to know that the District had plans to implement the

Comprehensive Academic Intervention Strategy (CAIS) and After School Academic Proficiency Program (ASAP) to improve reading performance.

School districts have a data collection schedule from Kindergarten through Grade 12. There have been a number of initiatives in schools over the years with the highest population of vulnerable learners. Prior to 2017, many of the initiatives were mandatory in the five Community Link schools, formerly known as Tier 1 schools that had the greatest populations of vulnerable students. However, when 49% of the Grade 2 students in the school district were not meeting reading expectations the school district initiatives were expanded to include all eight of the Community Link schools. The ASAP Program is a pilot project that was implemented in the Fall of 2017 and was expanded to include three Community Link schools, formerly known as Tier 2 schools. Implementing the ASAP Program was a joint partnership between the Aboriginal Education Department, Learning Innovations and the Community Link schools. Schools required full participation in the Program by teaching staff. Teaching staff were given options to participate in the Program or be transferred to another school that was not involved in the Program. The ASAP Program is delivered 3 days a week for 2 hours each day after school, and focuses on Reading, Math, Social Emotional and Physical Education. There can be a maximum of 20 participants at each site location. Children entered the program through a registration process that includes baseline assessments of reading and numeracy skills and consultation with classroom teachers and families. Selection of students is then done collaboratively with teaching staff members and the ASAP program is available for students in Grades 1 to 3. However, if there are limited spaces available, schools have been directed by administration to give priority to self-declared Aboriginal students.

My research project was quantitative and analyzed data obtained from the ASAP program to determine if there was a relationship between participation in the ASAP program and the desired reading outcomes for vulnerable students. Further to that data, I also explored if there was a particular grade level who performed better than the others, or if one site had different results than the other locations. I collected the pretest and posttest scores of each of the participants that was obtained using the BAS measurement system.

The sample size included all the participants in the ASAP program during the 2017-2018 school year. A quasi-experimental pretest and posttest design was used. "Quasi-experimental studies utilize intact groups when random assignments may not be possible" (Creswell, 2012). All the data were collected anonymously to protect the identity of the participants as well as the locations. Not being able to identify the location or students of the ASAP programs allowed me to conduct myself ethically with my colleagues.

I then conducted a quantitative study to determine the effect size of the ASAP program on reading achievement of students in Grades 1 to 3. I employed a quasi-experimental pretest and posttest design using ANOVA and a paired *t* test to determine the effects of the ASAP program on reading achievement. I then used tables and figures to display my data and reported on my findings.

Research Question and Hypothesis

This section will describe the research question and supporting hypotheses in support of answering the research question.

Research questions

This study was guided by the central research question: How does participation in an after-school program effect the reading achievement of students in Grades 1 to 3?

Supporting questions included: Was the effect on reading achievement more significant in a particular grade of students who participated in the after-school program? Was the effect on reading achievement more significant at a particular site of students who participated in the after-school program?

Hypotheses

The null hypothesis was: H_o: There was no significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3, or site locations who participated in the After School Academic Achievement Program (ASAP) as measured by the Benchmark Assessment Systems.

The three alternative hypotheses were: H_1: There was a significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP); H_2: There was a significant difference between grade levels in the Pretest and Posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP) and, H_3: There was a significant difference between site locations in the Pretest and Posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP).

Limitations and Delimitations

Limitations

Limitations are occurrences that arise beyond the researcher's control (Creswell, 2012).

1. The number of participants at each school site (Student-teacher ratio).

2. The data was collected by individual teachers at each site. I could not account for errors/differences in data collection.
3. Implementation of the reading program may differ at each location due to teacher autonomy and students enrolled in the program.
4. The BAS pretest and posttest data is the only data that was available for analysis. The findings are only generalizable to the population purposefully sampled in this project.
5. Reading gains may be attributed to other factors (i.e. maturation), rather than the Levelled Literacy Interventions (LLI).
6. Random assignment was not possible because the study included all of the participants in the After School Academic Achievement (ASAP) Program.
7. The use of BAS as a reliable and valid measurement tool.
8. Each location submits and collects the data at the same time according to schedule.
9. ASAP teachers received the same professional development and training.
10. The resources used to deliver the program are prescribed and mandatory.
11. I cannot account for errors or missing data.
12. This is a school district pilot project. Only one year of data was available to analyze.

Delimitations

1. Only considered data from Community Link Schools within one Northern British Columbian school district.
2. Data from participants was only analyzed for students in Grades 1, 2, and 3.
3. Only data from participants who had intact pretest and posttest data were considered for the project.
4. The pretest and posttest data received from the school district was accepted at face value.

Summary

Chapter 1 addressed the introduction of the research project as well as the significance, background and need for reading interventions. An introduction to the quasi-experimental quantitative study that was utilized was reported including the research question, hypotheses, limitations, delimitations, and measurement tools. The necessity of twenty-first century schools to evolve to meet the increasing needs of struggling readers was examined. In response to the dismal district data of the reading abilities of second grade students that reiterated the need for intensive reading support in the Community Link schools, the ASAP program was implemented. The ASAP program is now in its' second year of a three-year pilot project. The after school program was implemented in the eight Community Link schools that house the highest population of vulnerable learners. The program was designed to provide intentional intervention and cultural programming in literacy and numeracy, cultural programming, health and nutrition, and mindfulness. The program runs for 2 hours after school, 3 days a week, for 32 weeks.

The review of the current literature to support this project will be synthesized in Chapter 2, including the achievement gap, vulnerable children and the issues that they face, trauma and poverty and its effects on learning, the achievement gap, reading interventions and the use of the Leveled Literacy Intervention (LLI) as a reading intervention, and the efficacy of after-school programs on supporting struggling learners.

Chapter 3 will review the quantitative methodology used to analyze the project, including the research design and rationale, the specific quantitative methods and tests that were utilized to analyze the data, and the data analysis plans. Results from the project are examined in Chapter Four including supporting graphs and tables. Chapter Five concludes with a discussion of the results and what those findings could mean for struggling readers in schools with a high

population of vulnerable students. The efficacy of the ASAP program on the reading scores of the participants is explored and analyzed to ensure the fidelity of the program.

Chapter 2: Literature Review

Schools are facing even more challenges with students who are entering schools with complex needs. Anxiety, mental health issues, trauma, and poverty all play a role in the development of young learners. These challenges facing students are magnified at Community Link schools that have a significantly higher population of vulnerable learners and are not just localized to a single school district. Across Canada and the United States, schools are facing an achievement gap between vulnerable learners and those that are not (Education Cities, 2016). One of the solutions to combat these issues is the after-school programs where struggling students have an extended day to provide them with the extra support, they require to be successful in order to close the achievement gap (West, Ainscow, Wigelsworth, & Troncoso, 2017).

This literature review will provide insight on the conceptual background of this study. It will focus on the key variables that can have a negative effect on a child's ability to learn, so that the readers will have an understanding of impediments to student learning. Recognizing and understanding barriers to learning allows educators to be more equipped to support learners. Some of the key variables that can effect a child's ability to learn affect many of the students that attend Community Link schools. Schools with a high population of students that are deemed to be vulnerable, or at risk, face challenges that are magnified by factors out of their control such as poverty and trauma. The literature review provides a discussion of studies that examine the issues facing vulnerable and at-risk children. It will include Community Mapping, which is done to determine where there are pockets of vulnerable populations so that resources can be better allocated. It will also outline some of the current research on trauma and poverty and their effects on learning as it is a barrier to academic success. A child's socio-economic status has also been widely studied as a determinant of academic success (Murphy & Tobin, 2011; Wadsworth et al.

2008). Trauma also plays an adverse role on a child's development and is often linked to poverty (Klest, 2012). The achievement gap occurs as a result of these factors that have a negative effect on a child's ability to learn. Reading interventions are explored including models Leveled Literacy Intervention (LLI) as a reading intervention at it was the chosen reading instrument used in this study. The LLI is a commercial reading program by Fountas and Pinnell (2018). The literature review will conclude with a comprehensive review of the efficacy of after-school programs on supporting struggling learners. The model of the after school program as an avenue for delivering reading interventions in schools where a high proportion of their population is deemed to be vulnerable or at-risk is at the crux of this study.

Assessments Identifying Vulnerable Children

School districts all across Canada utilize Community Mapping to identify pockets of vulnerable children so that policy makers and school districts can better allocate their resources to where they are most needed (Lapointe, Ford, & Zumbo, 2007). Community Mapping provides invaluable information regarding neighborhoods in determining the percentage of learners that are deemed to be vulnerable. The Human Early Learning Partnership (HELP), defines vulnerable children as children who are likely to struggle in school and life unless interventions are put in place to support them (Human Early Learning Partnership, 2016). Vulnerable children face many challenges, including a high risk for reading failure, due to the widening vocabulary gap in comparison to their peers being raised in working-class families (Jalongo & Sobolaki, 2010). HELP (2016), uses the Early Development Instrument (EDI), which is a questionnaire, completed by kindergarten teachers across the province of British Columbia, to measure the developmental health of the youngest learners. The EDI started in Canada in the

late 1990s and since then has collected data on more than 1.5 million Canadian children (Human Early Learning Partnership, 2016).

Muhajarine, Puchala, and Janus (2011) examined the EDI to determine if there was a significant bias in the measurements of the subdomains between Aboriginal and non-Aboriginal students. While the project used data collected from a sample taken in 2003 on 2,468 kindergarten students in Saskatchewan, Canada, another version of the EDI is completed by Kindergarten teachers in British Columbia every three years in February. The waves of data were used to measure school readiness, but also to identify students that are deemed to be vulnerable, as in not ready for school. Children are assessed on five domains including physical health and well- being, social competence, emotional maturity, language and cognitive development, and communication skills and general knowledge. Each of the domains can then be further broken down into subdomains. While Aboriginal children are often rated much lower as having school readiness the challenge is to determine whether there are real group differences or validity issues with the EDI as there are often other factors that can be attributed to the difference. According to Rothman (as cited in Muhajarine, Puchala, & Janus, 2011), four out of 10 Aboriginal children grow up in poverty compared to fewer than two out of 10 non-Aboriginal children. Many studies cite the effect of poverty on school readiness (Welsh, Nix, Blair, Bierman, & Nelson, 2010). This research by Muhajarine, Puchala, & Janus (2011), conceded that there were many studies that determined the validity of the EDI as a measurement of school readiness for all children, but very little research had been conducted specifically on Aboriginal children. Their research examined the structure of the EDI at the subdomain level. The study, which was repeated on data from 2001 and 2005 to test the reliability of the study, found that, on average, Aboriginal

children were rated lower than non-Aboriginal children in each of the subdomains and a higher proportion of them were deemed to be at-risk.

Ktunaxa (2011) found that data collected for child development are ways of gaining valid and meaningful knowledge if completed with the child and families' wellbeing at the forefront and are relevant to the Indigenous ways of knowing and learning. Ktunaxa (2011) went on to demonstrate how the norms of the Western world were embedded in the research questions of the EDI. Indigenous children would score lower because of their cultural ways of knowing and learning that using the EDI to measure Aboriginal students could misidentify these children as vulnerable. According to the author, while the EDI can be a useful tool for determining where resources are needed, it could also have a detrimental effect on Indigenous cultures. EDI data may be biased in determining vulnerability within Indigenous families when in fact, it may just be differences in norms between cultures (Ktunaxa, 2011).

A study by Janus, Zeraatkar, Duku, and Bennett (2018) collected data for 29,692 children to determine whether the EDI can be used for children with special health needs the same as it is used for typical children. The distribution of scores and measures of the internal consistency of the EDI were examined in this study. Janus et al. (2018) assessed a construct validation by correlating the EDI scores with gender and age and used a confirmatory factor analysis to evaluate the factor structure of the EDI. The researchers found that in the performance of items and domains that there was a similarity to typical children. Boys scored lower on all EDI domains, the structure produced similar goodness-of-fit statistics which is how well theoretical distribution fits the empirical distribution (Glass & Hopkins, 1996). Janus et al. (2018) believe that the results of this study are of particular importance because they support the EDI as a valid measurement with students with special health needs.

D'Angiulli, Warburton, Dahinten and Hertzman (2009), completed a study to determine the predictive validity of the EDI. This study is of particular importance because it claims that the EDI can identify students that will continue to struggle in school. Having this knowledge, would allow educators to target students with interventions to combat this. The predictive validity study examined the association between being deemed as vulnerable on the EDI at the Kindergarten level with a students' basic skills achievement in the fourth grade. The researchers claim is that they can statistically predict achievement-related basic skills at least four years in advance. The study by D'Angiulli et al. (2009) linked the students EDI score in Kindergarten with their Foundations Skills Assessment (FSA) score in fourth grade. The FSA is a provincial assessment that is completed by all students in Grades 4 and 7. They used relative risk to estimate the degree of association between types of vulnerabilities on the EDI and not meeting scores on the FSA. The analysis of this study found that groups of children who are deemed vulnerable on any of the EDI scores are 2 to 4 times more likely to perform below average on the Grade 4 FSA. Being vulnerable at the language and cognitive development domain on the EDI has the strongest relationship with not meeting outcomes on the FSA. The percentage of children who do not meet expectations on the FSA increases if they are deemed vulnerable on more than one domain. D'Angiulli et al. (2009) compared FSA results for their study, even though this assessment may not be supported by teachers as a reliable or valid measurement of student achievement.

Poverty and Trauma and its Effects on Learning

Poverty is a prevalent factor in determining vulnerability in the district and researchers have been studying its detrimental effects on learning for decades. In 2003, one out of every six Canadian children lived in poverty (Ferguson, Boivard, & Mueller, The impact of poverty on the

educational outcomes for children, 2007). Children who come from poverty are more likely to suffer from cognitive and developmental delays, learning disabilities, and emotional and behavioral issues (Murphy & Tobin, 2011). Children coming from poverty often lack literacy opportunities. It is difficult for parents who are focused on day to day survival issues to see reading to their child as important or necessary (Jalongo & Sobolaki, 2010). Single working parents often work long hours to ensure that they have the monetary needs to support their family. Poverty also has an effect on a child's oral language. Children between the ages of 1 and 4 that come from homes that are on some form of social assistance are exposed to approximately 13 million words (Tienken, 2012). Meanwhile their counterparts from professional homes are exposed to 45 million (Tienken, 2012). Poverty can also be linked to other factors that snowball to have an effect on learning such as poor attendance, poor nutrition, and lack of a positive role model in the home (Morrissey, Hutchison, & Winsler, 2014).

A recent research study completed by the British Columbia Teacher's Federation (BCTF) claimed that many students who face poverty also have poor attendance in schools (White, 2016). Poor attendance in school is linked to learning gaps and prevents them from fully participating at school (White, 2016). White (2016) headed a focus group for the BCTF to examine the impact of poverty on public students in British Columbia schools. They employed a qualitative research design that used focus-group methodology. The focus group included 29 elementary and secondary teachers from four school districts. The focus group was interested in the perceptions of teachers of the effects that poverty has on students to prevent them from fully participating in school and from being successful at school. The focus group was also interested in the teacher's views of what supports were needed in the classrooms, schools, and communities that could support students and families that were facing poverty as a barrier in education. This

study was valuable because it not only focused on the negative barrier of poverty on education, but also explored the positive supports that schools, districts, and communities could put into place to support impoverished families. However, this study did not include populations where poverty is high and did not receive enough information on Aboriginal Students or new immigrants to Canada. White and the focus group see this study as a starting point with much work still to be done. But, they see it as taking a positive step in the right direction.

Past research on the effects of poverty on the academic achievement of children focused on barriers to education rather than solutions. A longitudinal study by Dubow and Ippolito (1994) examined the effects of poverty as well as other risk factors on children. Their research found that poverty was the greatest single indicator of future failure in life. They also claimed that poverty had a positive correlation with anti-social behavior. Dubow and Ippolito (1994) purported that there was also a negative correlation between the number of years that a child lived in poverty with reading and math scores. The effects of poverty is a barrier to education, however, resilience and protective factors allow some children to succeed in spite of poverty Holliday, Cimetta, Cutshaw, Yaden and Marx (2014).

Holliday et al. (2014) studied the close relationship between a family's socio-economic status and their academic achievement. They used multiple linear regression to examine the correlation between school readiness assessments, the number of hours that childcare has been provided, the general health of the child, the language spoken in home, the engagement of the child with the parent, and the level of education of the parent. Their study aimed to identify protective characteristics that are associated with children who live in poverty. Protective characteristics allow the child to be successful despite their socio-economic status. The study was done in 2009 and the study sample included 1,200 kindergarten students from 82 schools in

Arizona. Schools from tribal lands were excluded from the study because appropriate consent could not be obtained prior to the study. The researchers then narrowed the study sample to 230 to isolate the protective factors. The children were randomly selected for the subsample from families that self-reported that they existed below the poverty line. Direct measures of school readiness were administered to all students and then the parents and teachers also completed a questionnaire. For the purpose of this study the Arizona Early Learning Standards were used which are very similar to the EDI. The students were measured on language, literacy, math, and attending to learning skills. The readiness skills of the students were then correlated with the protection factors of health, hours spent in childcare, caregiver engagement, home language, and the education level of the parent. The researchers used chi-square analysis to compare the demographic characteristics and the health index components. Multiple linear regression models allowed them to control for parent education and home language while they were examining the association between indicators of resilience and school readiness measures. Holliday et al. (2014), found that better health and increased childcare hours was a predictor of math achievement. Better health was also a predictor of increased skills for attending to learning. Higher parent education was closely linked to increased scores in language proficiency. Home language was positively correlated with both language and math skills. This research is important because it acknowledges the barriers of poverty, but it also acknowledges that poverty does not have to be the defining factor in the academic achievement of students.

A study by Okilwa (2016) focused on the academic achievement of middle-school students from low-socio-economic backgrounds. School failure for middle-school students from poverty is magnified by the transition from an elementary school to a middle school and the physiological changes that come from adolescence. The researcher used the Early Childhood

Longitudinal Study-Kindergarten (ECLSK) from the class of 1988-99. The ECLSK collects information on students when they first enter school on their characteristics including their first transition into school until the eighth grade. Data from the ECLSK were collected from students, parents, teachers, and administrators in seven waves from the 1998 fall kindergarten year until the 2007, spring eighth grade. The data in this study were from 12,026 students in the fifth grade wave from the spring of 2004 and the eighth grade wave from the spring of 2007. The students had completed cognitive assessments in both collection waves and were assigned valid sampling weights. The study examined parental involvement and school belonging as protective factors. Achievement in Grade 8 was the dependent variable for the study. The measures used for this study included achievement, parental involvement, and school belonging. Parental involvement included school participation, home discussions, and home routines. A sense of belonging included the students feeling accepted, respected, included, and supported. The control variables were the socio-economic status of the family, middle school, prior academic achievement, and student demographics. A multiple regression analysis was performed using a statistical analysis program. The control variables model was estimated to the sample as a way to estimate the contributing effects on achievement. The main effects regression model was then estimated to the student sample. Finally, multiplication interaction terms were added. Interaction terms were created as a product of the two main independent variables and selected control variables. The analysis found that combined together, parental involvement was not significant as a factor in achievement, but school belonging emerged as a statistically significant predictor of achievement. However, prior achievement in the fifth grade was the single most significant factor of academic achievement in the eighth grade. The results from this study are both valuable and promising. The research from this study demonstrates the importance of a culture of

inclusion in the schools. It validates that a warm, welcoming, inclusive school that values and supports their students can make a difference regardless of the lack of supports that the student receives from their home.

Research from Pillay (2017) uses a social justice theoretical framework to examine the relationship between housing conditions and literacy achievement. This quantitative study collected data from 160 fifth grade students in South Africa, through the use of a survey. According to Cunningham and MacDonald (2012), a child's housing needs play a pivotal part in a student's academic achievement because they need a safe and healthy environment to live in that contributes to learning. The survey method Cunningham and MacDonald (2012) selected could accurately gather self-reported and factual information from participants. Participants were from four different fifth grade classes in a low to middle-class socio-economic status school. The *Do-It-Profiler Survey* was used as it had been standardized on almost 35,000 learners as part of a previous study on socio-economic status. Two questions on the survey that addressed the type of home that they lived in and the number of people who lived in their home were. Another question asked the students if their chores at home affected their homework. These were used as the independent variables. The dependent variables were five separate literacy tests. Descriptive statistics were used to quantify the types of homes, the number of people who lived in the home, as well as how many of them believed that their chores affected their homework. ANOVA was then used to analyze the data and the results showed that the null hypothesis should be rejected. The study had two findings. First, students who lived in brick houses performed better than students from informal houses. Second, students who lived in one room homes, had chores or work after school performed poorly on the tests. There were some learners that still did well

academically despite their living conditions. A child's living conditions can negatively influence their ability to learn at home, which can affect their academic achievement at school.

Trauma also plays a role in creating learning difficulties for a child in the classroom. Trauma during the early years jeopardizes children's neurodevelopment and creates deficits in regulating capabilities, language and executive functioning skills (Creeden, 2019). Spann et al. (2012) added to this argument by stating that abuse and neglect in childhood can have an influence on executive functioning into the teen years and can also affect a child's ability to learn in school. According to the Statistics Canada website on Criminal Victimization in Canada, in 2014, one-third of Canadians aged 15 and older have had some exposure or experienced some form of abuse during their childhood years (Statistic Canada, 2018). Statistics Canada used self-reported data from the 2014 General Social Survey on Victimization (GSS) with police reported data. Police reported data comes from the Incident Based Uniform Crime Reporting Survey and the Homicide Survey. Both surveys collect data on the prevalence and characteristics of violent offences. Events that cause childhood trauma happen only once or can occur a number of times over an extended time period.

Sharkins, Leger, and Ernest (2017) examined different factors that contributed to the language and learning in young children by looking at socio-economic factors and caregiver's mental health. A multiple linear regression (MLR) path analysis was used to study caregivers and children from a non-profit Early Head Start Program. This location was purposefully chosen because of the demographic and socio-economic characteristics of the participants. An assessment tool was used to identify the different aspects of development in the children participating in this study. Skills such as cognitive and language abilities and gross and fine motor skills were used.There is a strong correlation between a child's cognitive ability and their

language development and children who had higher scores on social emotional development, also scored lower on cognitive tasks (Sharkins, Leger, & Ernest, 2017). A higher social emotional score is correlated to a decreased social emotional well-being based on the MLR path analysis. The results of the study shared valuable information on the impact of social emotional skill on language and cognitive development for teachers and parents. Limitations to this study included an incomplete data set to analyze effecting the ability to validate the research on the mental health of the parent and its effect on the child's cognitive abilities.

Research has shown that poverty correlates to a child's ability to learn. Poverty and trauma are factors that can affect a child's ability to learn but are out of the control of the school. Both poverty and trauma are contributing factors to the achievement gap.

The Achievement Gap

The achievement gap is the difference in academic achievement between minority and disadvantaged students and their middle-class peers (Porter, 2007). Reardon, Valentino, and Shores (2012) reported that by the time students enter high school, students from low socio-economic backgrounds are typically five years behind in reading and writing related skills compared to those their classmates from higher socioeconomic backgrounds. This research was based on the Early Childhood Longitudinal Study, Kindergarten Cohort data that were collected on a sample of 25,000 kindergarten students in 1998. These students were assessed until the spring of eighth grade in 2007. Evans (2005) argued that society must reframe the way that it addresses the achievement gap and contended that there are ways that schools can support their vulnerable learners. However, the majority of the students' life is spent outside of the school and those experiences have a greater effect on the student, than the school. By the time a student has reached high school, they have spent only about 10% of their life in school (Evans, 2005). The

onus for closing the achievement gap has often been placed on the districts and schools (Cohodes, 2018). However, Gardner (2000) claims that it does not matter what schools do to close the achievement gap because one could accurately predict a child's chances of attending college by knowing only his or her mailing address.

Over 15,000 children participated in a study using a Mathematical Computation Test (Caro, McDonald & Willms, 2009). Data was retrieved in four cycles between 1994 and 2001 composed of a representative sample of children, birth to age 11 to adulthood. The results of this study proved that the gap is widening in the subject area of Math between the students of higher and lower socio-economic families. A shortcoming of this study was that that they could not generalize their findings to include other subject areas. Caro, McDonald, and Willms (2009) also felt that there needed to be more studies on the reasons why socio-economic status has such a strong effect on academic achievement. Further research is needed to determine the underlying factors contributing to the achievement gap, including greater subject specific factors and age factors (Caro et al., 2009). In the last four decades, not only has the income gap widened, so has the achievement gap among students from low socioeconomic backgrounds (Duncan & Murnane, 2014).

According to Cain and Oakhill (2011), the achievement gap is similar to the *Matthew Effect* in reading that was introduced by Stanovich in 1986. The Matthew Effect in reading refers to how the gap between good readers and poor readers increases over time (Cain & Oakhill, 2011). Cain and Oakhill's (2011) study sought to find evidence of the Matthew Effect in children. Their longitudinal study of children, aged eight to 16 years, measured their reading comprehension, word reading, and vocabulary. The results from their study did not find any evidence of the Matthew effect for word reading and comprehension. However, there was

evidence of the Matthew effect in vocabulary growth. This study supports the importance of early reading (Cain & Oakhill, 2011). Children that struggle with learning at an early age often engage in less reading related activities (Stanovich, 2009) and students who do not read proficiently at their grade level expectations, continue to have reading difficulties (Buckingham, Wheldall, & Beaman-Wheldall, 2014; Taylor, 2017).

Cain and Oakhill's (2011) research demonstrated that there is an achievement gap, but more studies are needed to determine the reasons that predicate it. Schools cannot eliminate the achievement gap on their own as many of the factors underlying the achievement gap lie within the realms of the family. Vulnerability, poverty, trauma, and the achievement gap all have mitigating factors that are beyond the reach of the school. Schools do have control over the programs that their students receive and the interventions that they are supported with.

Reading Interventions

Numerous studies have examined the efficacy of reading interventions to support struggling readers. The models and systems of reading interventions are as varied as the studies. Reading affects academic success along with a students' emotional and social developments throughout life (Bradley & Greene, 2013) and early intervention can significantly decrease the number of students with reading difficulties (Partanen & Siegel, 2014). There are many factors that can cause a student to have reading difficulties, both biological and environmental (Partanen & Siegel, 2014). To be a proficient reader, a student must be able to accurately decode and read fluently with understanding (Snowling & Hulme, 2011).

Olson, Keenan, Byrne, & Samuelsson (2014) included environmental factors that can have an effect on a child's ability to learn to read including preschool language, how much exposure they have had to print, quality and quantity of reading materials, the influences of their

family and other children, income level, and whether the reading material is in the child's first language. Children from low income families often start school behind their peers (Ferguson, Boivard, & Mueller, 2007) and fall behind in school before the third grade (Ferguson, Boivard, & Mueller, 2007). From Kindergarten to Grade 3, there is a salient shift from learning to read to reading to learn (Harlaar et al., 2007). Reading practice influences reading and language development throughout the student's life (Ferguson, Boivard, & Mueller, 2007). Therefore, as students move up in the grades the reading content becomes more complex and the struggling reader becomes a struggling student when reading is embedded in all the subjects. These students may drop out of school and there is a correlation between dropout rates and being imprisoned (Cutillo, 2013). Many school districts believe that early intervention is necessary to support vulnerable learners (District Achievement, 2018).

Vaughn et al. (2011) looked at the effects of interventions of both individualized and standardized interventions on eighth grade students. Their hypothesis was that students who participated in the individualized interventions would outperform students who participated in the standard intervention on reading-related outcomes. They added that they felt both treatments would have outcomes that would be statistically significantly higher than those for students in the comparison group. The participants in the program were chosen because they had not met benchmarks for response to intervention after a year of treatment. The sample came from two urban cities with approximately half of the sample from each. A total of 182 students were involved in the study and another 42 students were used for the control group. The students were chosen because they had been identified as struggling readers from the data from the state accountability test. The study also included students that had originally been exempt from the state test due to their low academic skills.

Students in the Vaughn et al. (2011) study, received 50 minutes a day of reading intervention, vocabulary skills, and comprehension which included students reading in pairs of skilled readers with less skilled readers. Phase 1 of the study focused primarily on word study and fluency. Phase 2 focused on vocabulary and comprehension and Phase 3 continued with the vocabulary and comprehension and added a component of writing. The researchers used *Latent Variable Growth Modeling* because it generates indexes of overall model fit and provides a framework for analyzing the differing effects of the covariates. They then used *multi-group modeling* with nested comparisons to evaluate the statistical significance of slope and intercept estimates. The effect size was then calculated using Hedges g formula. Vaughn et al. (2011) found that students in the individualized treatment did not excel over students in the standardized treatment. A limitation to the study that the researchers cite is that the school serviced many students from low socio-economic backgrounds. This limitation connects back to the discussion on the effects of poverty on a student's cognitive abilities.

The Center for Research in Educational Policy (2010) published a mixed-methods study which employed a randomized controlled trial to evaluate the effects of LLI in increasing reading achievement of students in kindergarten through second grade, while also examining the implementation fidelity of LLI and determining the perceptions of LLI from the stakeholders. Both quantitative and qualitative data analyzed. The study included 218 students from Kindergarten to second grade from nine elementary schools from two school districts in the United States. Pre and posttest data were collected using the Benchmark Assessment System (BAS) and the Dynamic Indicators of Basic Early Literacy Skills (DIBELS). Focus groups were conducted with teachers to determine their perceptions of the Leveled Literacy Intervention (LLI) program. The feedback from the focus groups was mainly positive with teachers generally

liking the program and feeling that it was beneficial to their students. The Center for Research and Educational Policy found that the teachers also had favorable responses in regards to the materials and the layout of the program. The teachers' frustrations included time management for lessons and technical issues with the technical components of the LLI program. The findings of the research found first grade students who received the intervention had a mean BAS score of 4.46 compared to 2.63 from students who did not receive any intervention. This study found that LLI had a positive impact from Kindergarten to the second grade. The study also found that LLI has a positive effect on the reading achievement of students from rural and urban areas with lower socio-economic status.

Researchers studied the effects of LLI compared to Reading Recovery (Harvey, 2011). Harvey's quantitative research design used a single factor ANOVA to compare the mean gains in text level reading using pre and post test scores from the observation survey subtest. His research looked at both programs to see if one program resulted in better reading scores than the other. The participants for the study were 59 first grade students from three elementary schools from North County Public Schools in North Carolina. Students were enrolled in both interventions and then placed in appropriate matched pairs. The means of these scores were compared to determine significance and effect size. Harvey's (2011) study found that the LLI students gained an average of 5.12 reading levels according to the Fountas and Pinnell Text Level Gradient (2018), which correlates the reading levels of the Fountas and Pinnell material with grade level expectations. Students who received the Reading Recovery intervention gained an average of 7.22 levels. ANOVA found no significant differences between the reading level gains of the participants who received LLI and the participants that received Reading Recovery, even though the average gain from Reading Recovery was larger. ANOVA demonstrated that the differences in the text level

reading scores were more dependent on the individual student rather than the intervention. The variability within groups demonstrated that the differences found within the groups outperformed the differences between the two interventions. There was also no significant gender differences in the reading scores. It is important to note however, that Reading Recovery is a one to one intervention while LLI is a one to four. A reading program that accesses four children at a time as compared to one is complimentary to time management in a classroom setting.

After School Programs

School and school district staffs continue to work together to develop innovative plans to support struggling vulnerable learners. Academic programs may take place before or after school, on Saturdays and holidays, or during the summer to provide a range of high-quality enrichment activities to support students' learning and development (Blazer C. , 2016) There have been studies conducted on after-school programs in the United States that vary in their purposes such that they have praised the efficacy of after school programs in being able to improve the academic achievement of the participants

Bayless et al. (2018) discussed the efficacy of an after-school program in improving reading of students from low-income homes. The Bridge Project is a community based after-school program that focuses on one to one tutoring, small group lessons and a program that gets books into homes. The quasi-experimental design was used to compare reading proficiency scores between students in public housing that attend the program and those that do not attend the program. Some of the strengths the authors addressed from this research spanning over three years, included the large sample size, selected from a multitude of feeder schools and the longitudinal nature of the research. The authors also provided additional research at the beginning that supported the necessity of after-school programs to bridge the learning gap that

inner-city students often are faced with. While limitations were reported, they felt the benefits of an after-school program outweighed the discrepancies in the data. More research is needed on the effects of after-school programs in improving literacy and reading skills.

Researchers at the University of California found that regular participation in high-quality after-school programs is linked to significant gains in standardized test scores and work habits, as well as reductions in behavior problems among disadvantaged students (Vandell, Reisner, & Pierce, 2007). One of the largest studies on after school programs was the Study of Promising After School Program. This study examined the correlations between high quality after school programs and desired academic and behavioral outcomes, for students that are considered to be low income. The study chose 35 programs that were considered to be high quality. There were similar characteristics within all the programs. The programs were open four or five days a week and were free. Each program had at least 30 participants and had strong partnerships with neighborhoods, schools and communities. The students were expected to have regular attendance and involved two age groups. One had students in Grades 3 and 4 and the second included Grades 6 and 7 students. This particular study found that the children who regularly attended the after-school program did better on standardized math tests, and teachers reported an improvement in their work habits and social skills with their peers as compared to students not involved in an after-school program.

While there are other studies that demonstrate that after school programs have a significant effect on the academic achievement of the participants, further studies on after-school programs have also shown that the programs had additional positive effects on the participants that academic achievement could also be attributed to. The After-School Matters program in Chicago, Illinois offers paid internships to high school students in a variety of areas, such as arts

and technology, to help them build a skill set that will benefit them when they enter the workforce (Afterschool Alliance, 2014). An evaluation of this After-School Matters program was completed through an experimental design and found that participants in the program had a more positive outlook on school and missed fewer days than students who did not attend the program. They also reported that they were able to self-regulate better and had fewer problem behaviors (Hirsch B. , Hedges, Stawicki, & Mekinda, 2011). In Texas, a quasi-experimental study on the 21st century learning after-schools programs was conducted to determine the effectiveness of the funded afterschool programs were meeting their goals and objectives (American Institude for Research, 2013). This study found that students in the Afterschool Centers on Education (ACE) program for 30 days or more saw a six percent decrease in their disciplinary incidents and an 11 percent decrease for participants who attended for more than 60 days (Naftzger, Manzeske, Nistler, & Swanlund, 2013).While they are not a direct measure of academic achievement, they are factors that contribute to academic achievement. Additional research would benefit the ACE program including information on youth returning to the program in subsequent years (American Institude for Research, 2013)

A report on after-school academic enrichment programs, based on data completed by the Afterschool Alliance Organization, found that high quality after school programs demonstrate the following best practices (Blazer, 2016). The programs clearly communicate their learning goals, state their objectives and then tailor the activities to meet the needs of the learners. The programs should meet local needs and complement the learning that takes place in the school and not just duplicate it. There needs to be frequent communication between the program, teachers, and school personnel. The programs provide a combination of academic, enrichment, and recreational activities. Homework support and tutoring sessions will be provided. Learning

activities should be relevant to the students and include hands on activities as well as implementing technology. The learning environment should be flexible and supportive and allow students time to collaborate. Students should be given individual attention and high-quality staff should be hired to work with the students. The programs should involve the families and community partners and of course be evaluated to monitor program effectiveness (Blazer C. , 2016). After school programs must be run in the neighborhood schools so that the students that need the programs most have equal access to the program. At-risk youths who would most benefit from an after-school program often participate in them less than their more advantaged peers (Bouffard et al., 2006).

Chapter Conclusion

A comprehensive review of the literature on the key variables was completed in Chapter 2. Community mapping was identified as a useful tool for determining where resources are most needed to support vulnerable learners, lacking school readiness skills. School readiness definitions vary widely and include a focus on factors at the child level (Snow & Van Hemel, 2008). The factors that determine vulnerability include the skills and attributes that are necessary for a child to be successful in school (Holliday et al., 2014). The achievement gap emphasizes the disparity in academic achievement between minority and impoverished students and their middle class counterparts. While the onus is on schools and districts to close the achievement gap, researchers claim that the schools cannot do it alone (Evans, 2005). Poverty and trauma contribute to the achievement gap and both have a detrimental effect on learning. Current research on poverty and trauma acknowledge the barriers that they pose to the ability of a student to learn, but they are also focusing on resilience and protection factors that allow for success through adversity. Educational institutions in areas of high poverty attempt to meet the needs of

their population by establishing programs that attend to the basic needs of their students so that they can establish a learning environment that is conducive to student success (Wilson, 2012). After school programs provide an opportunity for vulnerable students to receive additional support that may not be available at home. After-school programs can be used as an avenue for providing reading interventions. Reading interventions can have a positive effect on students' learning as well as their self-esteem. Reading proficiency is one way to break the poverty cycle and open doors to greater opportunities for children in and out of the school setting (Kellet & Dar, 2007). After-school programs provide students with an opportunity to attain the skills necessary for academic success in an environment that is nurturing and conducive to learning.

Chapter 3: Research Design

The purpose of this project was to determine the effects of participation in an After School Academic Proficiency (ASAP) program on reading achievement scores for Grade 1, 2, and 3 participants. It also sought to determine if one grade level responded to the intervention better than the others and if any of the specific site locations showed statistically significant differences than the others.

Chapter 3 will begin with an introduction to the research design that was used for this project. It will include a description of the variables chosen for the analysis of this study and the reasoning for the quantitative quasi-experimental design that was employed to test the hypothesis. It will follow with a description of the data source and the sample population that chosen for this study. The sample for this study was purposefully chosen, so it will include details on the participants as well as the site locations involved to complete the analysis. There will be a review of ethical considerations and consent that were considered for this particular study. Ethical considerations and consent are necessary to ensure the integrity of the research and the researcher. As well, the measures used to ensure the confidentiality of the project and the anonymity of the participants will be explained. An evaluation of the study will be explored including the validity and reliability of the instruments used for data collection. The section will also outline Type I and Type II errors that could occur. The data analysis plan will detail both the collection of the data and the necessary measures used to prepare the data for analysis. It will follow with a description of the independent and dependent variables and the statistical analysis used to test the hypotheses. A summary of Chapter 3 will be included at the end, as well as an introduction to the findings of the data analysis in Chapter 4.

Research Design and Rationale

Quantitative research is an inquiry-based approach that is useful for describing trends and explaining the relationship among variables (Creswell, 2012). This quasi-experimental project used quantitative measures to determine if there was a significant difference between the pretest and posttest scores of students from the eight ASAP program schools. It also sought to find if there were statistically significant differences between the grade levels or the specific site locations. To be statistically significantly different with a *p*-value of .05, the probability that random chance could explain the results would be less than 5% (Glass & Hopkins, 1996). According to Creswell (2012), an experimental research design is best used when you want to determine if a specific treatment influences an outcome.

In this study, the effect of the independent variable of participation in the ASAP program, on the dependent variable of reading achievement was analyzed. According to Creswell (2012), a quasi-experimental pretest and posttest design are used when there is a need to use intact groups for the purpose of comparing scores and an experimental design is the correct research design to use when trying to determine cause and effect. A pretest is a measure of student's knowledge prior to receiving any intervention. The pretest is then followed by a posttest, which is used to measure any differences of knowledge after the intervention has been applied (Creswell, 2012). All pretest and posttest scores of all participants from Grades 1 to 3 who attended the ASAP program in a Northern British Columbia school district during the 2017-2018 school year from seven of eight Community Link schools were to be included in this research study.

Data Sources

Upon admittance to the ASAP program in October of 2017, the participants were administered a pretest to measure their reading level using the Benchmark Assessment Systems

(BAS) which measured both their *Instructional* and *Independent* reading level according to the Fountas and Pinnell Text Level Gradient (2016) (See Appendix E). The participants were then assigned pretest scores that could range from level AA to Z. The Instructional reading level of the participants was used for the purpose of this study. The ASAP program employed the Fountas and Pinnell Leveled Literacy Intervention System (2017) to provide the participants with targeted reading intervention using the small group guided reading model. After the program was completed in May of 2018, the participants were given a posttest to measure their Instructional and Independent reading levels. The pretest and posttest scores were then entered by the individual ASAP teachers into the school district database. Ethics for the project was then reviewed and a formal, written request to obtain the data was sent to the District Principal of Learning Innovations (See Appendix A). Upon approval to use the data for the study, the data were then anonymized to preclude any identifying student or site location information. The data was produced in paper form in the aggregate and separated by site location. The data included the grade level of the student and the pretest and posttest scores for their Instructional and Independent reading levels and grouped together according to anonymous site locations. Data provided by the school district were from seven of the eight site locations.

Study Sample

The population sample for this project included all of the participants in the ASAP Program from seven separate site locations in the 2017-2018 school year. One of eight Community Link schools' data was not included in this study at the discretion of the school district. The population in a research study refers to individuals with the same character traits being studied (Creswell, 2012). Data was accepted from all participants that attended the ASAP Program from each of the seven site locations in 2017-2018. Only participants that had intact

pretest and posttest data scores were included in this study. The sampling size for this project was 86 after participants were removed for incomplete data. The target population were students in Grades 1, 2, and 3 who attended the ASAP program during the 2017-2018 school year. This is a non-probability convenience sample because all of the participants were in the program from the same school district in Northern British Columbia in one school year (Creswell, 2012)..

Research Ethics Board Review

Ethical Concerns

Any time that research is done that involves human participants there is a need to complete an application to the ethics review board. According to Gelling (1999), research ethics committees are necessary to ensure that the scientific merit and ethical standards have been adhered to when completing research that involves people. They protect the rights of the participants, the effects of the research on society and the researcher. (Gelling, 1999). There was minimal risk to the participants due to the nature of the study and all data was anonymized, meaning that it did not have any personal identifiable information.

A formal review of the requirements of Ethics was completed prior to beginning the study. It was determined from the University of Northern British Columbia Research Ethics Board, that ethics approval was not necessary as the data were anonymized and did not involve human participants. Once I had been given permission from my supervisor, Dr. Andrew Kitchenham, to obtain the data, I then formally contacted the school district Principal of Learning Innovations in writing (See Appendix A) to request access to the pretest and posttest data from all of the participants in the ASAP program during the 2017-2018 school year. All necessary forms were then filed with the school district (see Appendix B and Appendix C). Data from the pretest and posttest BAS obtained during ASAP from the 2017-2018 school calendar year was then released for seven of the participating schools.

Confidentiality and Anonymity

Student names and any personal identifiable data were removed prior to obtaining the data from the school district. The data was completely anonymized by individual students and specific site locations. The data were kept it in a locked cabinet that is inside a locked room. When I am finished with the data, they will then be destroyed five years after the project, or returned to the District if that is their direction. I will and have not discussed this project with anyone that is not directly involved with the completion of the project. All of the data were kept confidential and presented anonymously. Although I teach Kindergarten at one of the site locations, none of my current students are in the ASAP program and confidentiality will be adhered to, to avoid any conflict of interest. There was minimal risk anticipated for participants in this study due to the nature of this study.

Evaluation of the Study

Instrumentation

The reading levels of the participants in the ASAP program were measured using the Fountas and Pinnell (2017) BAS. The BAS measured the Independent and the Instructional levels of the student. An Independent reading level is one that is relatively easy for the reader and that they can read with 95% accuracy. Instructional level is challenging but still manageable for the reader and can be read with 90% accuracy (Fountas & Pinnell, 2017). The instructional level of the participant was used for this study. The BAS score was obtained by having a teacher work one on one with a student to complete a running record of a leveled text. The teacher tracked errors, omissions, and miscues while the student was reading. After the student had finished reading the leveled text, the teacher then asked questions and recorded the answer. A reading level of Independent, Instructional or Hard was then derived from the fluency and comprehension scores. The Fountas and Pinnell Text Level Gradient (2016) from Kindergarten

to end of Grade 3, starts at AA and ends with P. Pre- A (also known as AA) is for students that are not yet at a measurable reading level. For the statistical purposes of this study the reading levels of Pre- A and A-Z will be recorded with the numbers one to 27. The pretest score was obtained in October of 2017 and the posttest score was obtained in June of 2018.

Reading interventions were delivered using the Levelled Literacy Intervention (LLI) was developed by Irene C. Fountas and Gay Su Pinnell, more frequently referred to as Fountas and Pinnell, in 2008. The LLI is a supplementary reading intervention that is designed for students who struggle with reading and writing from Kindergarten to Grade 8 (Heinemann, 2016). It is used to support struggling readers by providing small group guided reading interventions. Small group instruction is a reliable and powerful tool that is used to meet the individual needs of learners (Frost & Sorensen, 2007). The objective of the LLI program is to provide struggling readers with the necessary skills to quickly close the gap between their personal reading achievement and their expected reading level (Ransford-Kaldon, Flynt, & Ross, 2011). The students are assessed using Fountas and Pinnell's BAS (2017). According to Fountas and Pinnell (2009), the BAS is a standard gradient that teachers can use to determine the level of text that the student can effectively process in terms of decoding and comprehension.

Validity and Reliability

A formative evaluation of the BAS was conducted by researchers to determine the reliability and validity of the texts as accurate measures for accessing students' reading levels (Heinemann, 2012). According to Creswell (2012), reliability is the consistency of scores of an assessment and test validity is the degree to which the assessment measures what it is supposed to measure. Convergent validity is determined by using other instruments to measure the same variable (Creswell, 2005). The reliability and validity of the BAS was determined by an outside team of three independent researchers. To determine the test-retest reliability of the BAS, the

students' reading scores on fiction books were correlated with their scores on non-fiction books. To determine validity, the assessment outcomes on the BAS were compared to other tests that purport to measure reading levels (Heinemann, 2012). The results from the reliability and validity tests demonstrated that convergent validity had a strong correlation in the first version of the LLI, with a correlation of .94 for fiction and .93 for nonfiction texts. "After two and a half years of editorial development, field testing, and independent data analysis, the Fountas and Pinnell Benchmark Assessment System texts were demonstrated to be both reliable and valid measures for assessing students' reading levels" (Heinemann,2012, p.13).

Type 1 and Type II Errors

A Type I error is the incorrect rejection of a true null hypothesis. That would include that participation in the ASAP program had an effect on the reading scores of the participants when in fact it did not have a significant effect. A Type II error is the failure to reject a false null hypothesis. That would conclude that the participation in the ASAP program did not have an effect on the reading scores of the participants, when in fact it did. All attempts have been made to avoid both Type I and II errors. Threats to internal validity refer to the inability to draw appropriate inferences related to the causality of the treatment on the outcomes or dependent variables and threats to external validity are those that compromise the researcher's ability to draw true inferences about the population from the sample (Creswell, 2012).

There is a threat to internal validity of the study (history, maturation) due to the fact that the ASAP Program runs throughout the school year and the students should be showing some growth from attending school. Therefore not all improvements may be attributed to the program. Not including gender information about the participants is also a threat to validity. Variance results may have been less sensitive if other factors such as gender were included in the study.

Threats to external validity include the extent to which this study can be generalized to and across people, places, and time. The variables in this study such as the use of LLI, the BAS, the population of the study, and the ASAP program are specific to this study and can only be used to describe the participants in this study.

Data Collection

All pretest and posttest data from participants in the ASAP program were entered into a database at the end of the ASAP program in June of 2018. The pretest and posttest scores were generated from the BAS Assessments completed by the ASAP teachers at each of the site locations. Unobtrusive measures were used to collect the data. As Creswell (2012) explains, unobtrusive measures of data collection are measures that do not require the researcher to intrude in the research context (Creswell, 2012). The pretest data was collected in the fall of 2017 and the posttest data was collected in May of 2018 at each of the site locations within the same two-week period by the ASAP teacher at each site and then entered into the school district database.

The data for this study was considered to be secondary data because it was obtained from the individual ASAP teachers at each of the site locations. The ASAP teachers entered the data into a school district database. Once the formal request and paperwork to obtain the data for the purpose of this research project was finalized and approved, the data was anonymized of any personal, identifiable information pertaining to the students or the site locations, and then released. I obtained the spreadsheets of the data from a representative of the school district, who obtained the data from the school district database and delivered it by hand to my place of employment. All ASAP teachers are qualified to teach in the Province of British Columbia and vary in years of service and specialties. All ASAP teachers received the same in-service for training on how to administer the BAS (2017) assessments and how to deliver the material to the participants using the Fountas and Pinnell LLI System (2017). The pretest and posttest data were

collected by individual teachers at each of the seven separate site locations using the Fountas and Pinnell BAS (2017) assessment.

Raw scores from the pretest and posttest BAS assessments were included for each participant. The raw data from the pretest and posttest scores of individual participants were separated by anonymized individual site locations. The data included the grade level, the fall Instructional and Independent pretest scores and the May Instructional and Independent posttest scores. The data were anonymized to preclude any identifying factors prior to its release. For the analysis of this study only the grade level of the participant and their individual Instructional pretest and posttest scores were used.

There were a total of 102 students who attended the ASAP program in the 2017-2018 school year. Eighty-six students were used for this study when the data was analyzed. The other 16 students were removed from the study because they did not have intact data that included the both a pretest and posttest Instructional score. Missing data occurred either because they moved during the school year, started the program late, or transitioned out of the program early.

Once data were obtained, an Excel spreadsheet was used to enter the data. Excel was used to enter the pertinent data for the study. A spreadsheet was created that included the participants' grade level, pretest score, and posttest score. The data was entered into an Excel spreadsheet by site location. There were seven individual site locations that were anonymized. Each site location was assigned a letter from A to G.

The BAS assigns students a pretest and posttest score according to the Fountas and Pinnel Text Level Gradient (2016) (See Appendix D). The Fountas and Pinnel Text Level Gradient correlates alphabetical letters with reading levels (See Appendix E). The gradient starts at AA for students who are not at a measurable reading level. Letters A to D corresponds with

Kindergarten, D to J corresponds with Grade 1, J to M corresponds with Grade 2, N to P corresponds with Grade 3, P to S corresponds with Grade 4, S to V corresponds with Grade 5, V to Y corresponds with Grade 6, and Z corresponds with Grade 7. There is an overlap of letters between the end of one grade and the start of another until Grade 7.

Numerical values were then used to replace the letter levels of the Fountas and Pinnell Text Level Gradient (2016) starting at one for AA level (e.g. AA=1), and A=2, B=3, C=4, D=5, E=6, F=7, G=8, H=9, I=10, J=11, K=12, L=13, M=14, N=15, O=16, P=17, Q=18, R=19, S=20, T=21, U=22, V=23, W=24, X=25, Y=26, and Z=27. Numerical values replaced the letter values for analysis of the data. The data was triple checked for accuracy after it was entered in the raw form and then again once the letter values were replaced with numerical values.

Data Analysis

Data had been collected using the Fountas and Pinnell BAS (2016) assessment by the individual ASAP teachers at each of the site locations, The BAS are integral to the Levelled Literacy Interventions System. The BAS assessments were used to determine a student's Independent and Instructional reading levels (Fountas & Pinnell, 2018). This study was a quasi-experimental design that compared the pretest and posttest data of the participants to determine if participation in the ASAP program had resulted in statistically significant differences between the scores. It also aimed to determine if there were statistically significant differences in the pretest and posttest scores between the grade levels and site locations. Measures of individual performances were the quantitative data that were collected and analyzed for this project. The measures of individual performances were determined using BAS. Quasi-experiments are experimental situations in which the researcher assigns, but not randomly, participants to groups because the experimenter cannot artificially create groups for the experiment (Creswell, 2012).

All of the participants from seven out of the eight site locations in the ASAP program with intact pretest and posttest data were included in this study.

The independent variable was Grade 1 to 3 students from Community Link School's participation in the ASAP program during the 2017-2018 school year. The dependent variables were growth in reading levels as determined by the BAS pretest and posttest data.

Reading achievement was measured as the difference in scores between the pretest and posttest BAS assessments. The data from the participants were first separated by grade level on a separate worksheet and then again by site location.

The mean gain was calculated by subtracting the pretest score from the posttest score to determine the measure of gains, if any between reading levels. All results of the mean gains were represented with positive integers, meaning that the students stayed at the same reading level or showed an increase in their reading level. However, it could have been possible to have a negative integer represented for the mean gain if the student had regressed between the pretest and the posttest. The average of the mean gain was repeated for each separate grade, as well as each individual site location. The mean of all gains was then subtracted from each gain score. This process was again repeated for each separate grade and individual site location.

A single factor ANOVA in Excel was utilized to test the hypotheses and determine if there were any significant gains between the grade levels and site locations, and if the null hypothesis would be accepted or rejected. An ANOVA, also known as the analysis of variance, is a parametric statistical test. According to Glass and Hopkins (1996), "ANOVA is used to determine whether the differences among the means are greater than what would be expected from sampling error alone" (p.377). ANOVA analyzed the effects of the independent variable, participation in the ASAP program, on the dependent variable of reading gains between grade

levels and site locations. ANOVA allowed for the analysis of the differences between the grade levels and site locations while controlling for the pretest. A paired t test was then completed to determine if the results between the pretest and the posttest for the entire group were significant and if the null hypothesis would be accepted or rejected.

The alpha level (*p*) was .05 for the analysis. The alpha level is also referred to as the significance level. The *p* values were calculated to determine the significance of the results. If the *p* level is less than the alpha level, the null hypothesis is to be rejected. If the *p* level is greater than the alpha level, the researchers would then fail to reject the null hypothesis.

After completing analysis with ANOVA to determine if there were statistically significant differences between grade levels or site locations it was appropriate to examine the group as a whole. A paired *t* test was used to determine if participation in the ASAP program had a statistically significant effect on the reading scores of all students, from all grades, and from all site locations. According to Glass (1996), a paired t test is used when both measures, the pretest and the posttest, are done on the same individual. Cohen's *d* was then used to determine the effect size to determine if the results were statistically significant.

Chapter Conclusion

The purpose of this study was to determine the effects of the ASAP program on the Instructional reading levels of the participants to determine if participation in the ASAP program had a statistically significant effect in raising the reading scores of the participants. The students in the study sample were between Grade 1 and 3 from seven separate site locations.

The ASAP program used the BAS as a measurement to determine a pretest and posttest reading level for each student based on fluency and comprehension. The participants in the ASAP program received reading intervention three times a week, for 30 minutes a day, using the Fountas and Pinnell LLI (2017) program.

The project used a quasi-experimental pretest and posttest design and quantitative methods were used to answer the research question and to test the hypotheses. The project sought to determine the efficacy of participation in the ASAP program on the reading scores of the participants as measured by the Fountas and Pinnell BAS. Raw data was entered into a spreadsheet using Excel. Individual site locations were assigned a random letter from A to G and reading levels represented with letters were relabeled with numbers.

The data was then separated by grade and site location and individual ANOVAs were calculated on both to determine if there were statistically significant differences between the groups. A paired *t*-test was then performed to determine if participation in the ASAP program had a statistically significant effect on the reading scores of the all the participants and Cohen's *d* was used to measure any effect size. Both descriptive and inferential statistics were used to analyze the data from this project.

Chapter 4 will include the research findings of the project including the tables, graphs and results from the ANOVA to determine if there is a significant effect from one grade over another, or if there is a significant difference between the site locations. It includes the results of the paired t test to determine the effects of participation in the ASAP program on the reading scores of the participants and use Cohen's *d* to measure any effect size. Both descriptive and inferential statistics were used to analyze the data from this project.

Chapter 4: Results and Discussion

Chapter 4 will begin with a discussion of the purpose for the research as well as the research questions that were posed for this study. It will follow with a review of the data collection including the sample population used for analysis and descriptive statistics of the demographics of the sample population by grade level and site location. Intervention fidelity will provide a brief overview of the delivery of the reading program as it pertains to the research study. Finally, the results of the data analysis will be presented along with a description of the statistical methods used for analysis of the data. The data were analyzed using descriptive and inferential statistics. Tables and figures have been used to provide a visual representation of the data.

The purpose of this study was to determine the efficacy of participation in the After School Academic Proficiency (ASAP) program on the reading scores of the participants. The research questions were**:** How does participation in an after-school program effect the reading achievement of students in Grades 1-3? Was the effect on reading achievement more significant in a particular grade of students who participated in the after-school program? Was the effect on reading achievement more significant at a particular site of students who participated in the after-school program? The hypotheses for this study were as follows:

The null hypothesis was: H_o: There was no significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3, or site locations who participated in the After School Academic Achievement Program (ASAP) as measured by the Benchmark Assessment Systems.

The three alternative hypotheses were: H_1: There was a significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic

Achievement Program (ASAP); H_2: There was a significant difference between grade levels in the pretest and posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP) and, H_3: There was a significant difference between site locations in the Pretest and Posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems (BAS) who participated in the After School Academic Achievement Program (ASAP).

Data Collection

The population sample of the study included 86 students in Grades 1, 2, and 3, from seven separate site locations. Data from seven of eight Community Link School locations were used in the analysis of this study. There are eight individual locations involved in the ASAP project, but the representative from the school district did not feel that the data from the eighth location would add to or take away from the project, and I respected her to decision to not include that location in the study. All participants come from the same school district in Northern British Columbia and attend schools that have a significant percentage of students who were deemed vulnerable or at-risk. The pretest data was collected in October (fall) and the posttest data was collected in May/June (spring). The students attended the ASAP program three times a week, for two hours a day. There were also two Kindergartens, five grade four, and three grade five students included in the data. These students participated in the ASAP program because their siblings were enrolled in the program. For the purpose of this study they are not included in the findings because they were given extra support while in attendance at the program, but did not take part in the targeted reading interventions. There were not any discrepancies in data collection from the data analysis plan described in Chapter 3.

Table 1

Demographic Data of Group by Site Location (reported in % and raw number of students)

SITE	%	n
A	9.30%	8
B	23.26%	20
C	12.79%	11
D	12.79%	11
E	19.77%	17
F	6.98%	6
G	15.12%	13

Table 2

Demographic Data of Group by Grade (reported in % and raw number of students)

GRADE	%	n
1	22.09%	19
2	45.35%	39
3	32.56%	28
TOTAL	**100.00%**	**86**

Description of the Sample

Data were collected through the school district database and included pretest and posttest data from 102 students that attended the ASAP program in the 2017-2018 school year from seven separate site locations. While each site could have a maximum of 20 participants, Table 1 demonstrates that there is quite a discrepancy in the number of participants at each site. A total of 86 students in Grades 1, 2, and 3 were used in the study as shown in Table 2, because they had intact pretest and posttest data. As seen in Table 2, the majority of the ASAP participants were in Grade 2. Students who did not have intact data because they were missing either pretest or posttest data were removed from the study. This was considered to be a convenience sample because all of the participants in the program attend the same school district in Northern British

Columbia (Creswell, 2012). According to Creswell (2012), this was nonprobability convenience sampling because the participants used in the study were available and convenient.

Intervention Fidelity

The ASAP program was implemented in all seven of the schools included in this project. All of the participants in the ASAP program received reading interventions from Fountas and Pinnell's (2017) Leveled Literacy Intervention System (LLI). The ASAP pilot project was in its first year of implementation. Year 1 started in September of 2017 and concluded in May of 2018. The ASAP pilot project is expected to operate until 2020. The students that attended the ASAP program received 30 minutes of LLI, three days a week, within the 2-hour after school program. Students received LLI instruction from a qualified teacher in a small pull-out setting. Some students started the ASAP program later than the October start-up date while others transitioned out before the end of the program. There were no reported adverse events related to the LLI intervention.

Results

Data Analysis

The raw data were obtained from the school district and then entered into an Excel spreadsheet. Both descriptive and inferential statistics were used. The Excel program was used to create bar graphs that depict the mean gains of all the participants by grade, all of the participants by site, and the pretest and posttest data from the entire population (See Figures 1-3).

Figure 1. Reading Achievement Mean Gains by Grade.

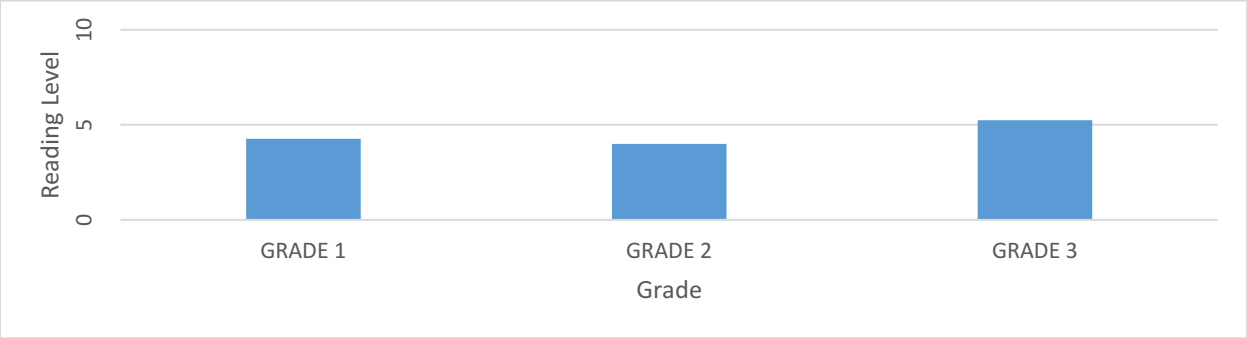
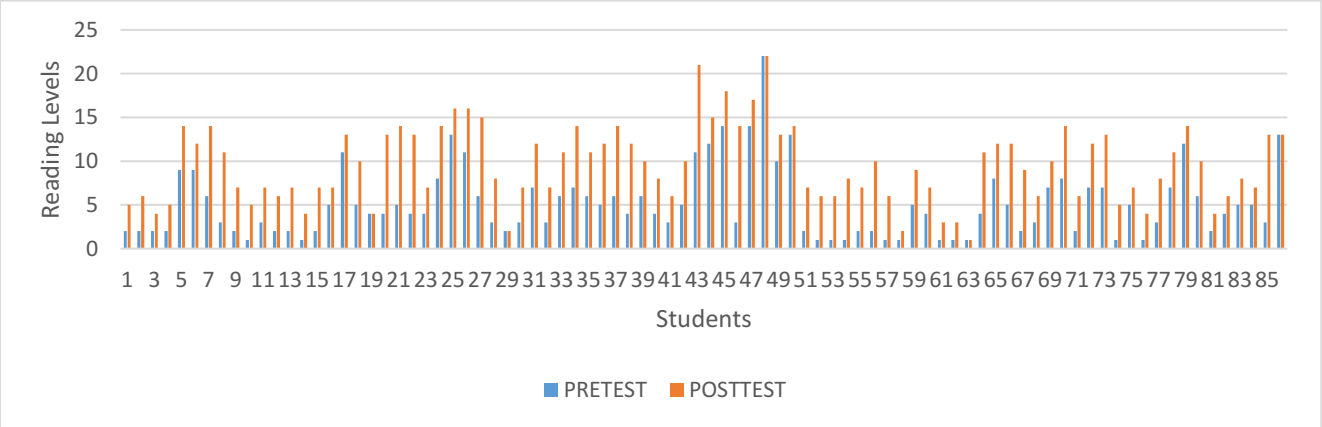


Figure 2. Reading Achievement Mean Gains by Site.

Figure 3. Pretest and Posttest Reading Levels of all ASAP Participants.



A single factor ANOVA in Excel was utilized to test the hypotheses and determine if there were any significant gains between the grade levels and the site locations, and if the null hypothesis would be accepted or rejected. An ANOVA, also known as the analysis of variance,

is a parametric statistical test. According to Glass and Hopkins (1996), the "ANOVA is used to determine whether the differences among the means are greater than what would be expected from sampling error alone" (p.377). The ANOVA analyzed the effects of the independent variable, participation in the ASAP program, on the dependent variable of reading gains between grade levels and site locations. The ANOVA allowed for the analysis of the differences between the grade levels and site locations while controlling for the pretest. A paired *t* test was then completed to determine if the results between the pretest and the posttest for the entire group were significant and if the null hypothesis would be accepted or rejected. The alpha level (*p*) was .05 for all the analysis. The alpha level is also referred to as the significance level. The *p* values were calculated to determine the significance of the results. If the *p* level is less than the alpha level, the Null hypothesis is to be rejected. If the *p* level is greater than the alpha level, the researchers would then fail to reject the null hypothesis. A paired *t*-test was used to determine if participation in the ASAP program had a statistically significant effect on the reading scores of all students, from all grades, and from all site locations. According to Glass (1996), a paired *t*-test is used when both measures, the pretest and the posttest, are done on the same individual. Cohen's *d* was then used to determine the effect size.

Discussion of Findings by Research Question and Hypothesis

Research questions

This study was guided by the central research question: How does participation in an after-school program effect the reading achievement of students in Grades 1 to 3?

Supporting questions included: Was the effect on reading achievement more significant in a particular grade of students who attended the after-school program? Was the effect on reading achievement more significant at a particular site of students who attended the after-school program?

Table 3

ANOVA Results for Site Locations: Tests of Between Sites Effects

Groups	*Count*	*Sum*	*Average*	*Variance*	*SD*
A	8	31	3.88	3.55	1.89
B	20	97	4.85	6.45	2.54
C	11	57	5.18	5.36	2.32
D	11	47	4.27	11.42	3.38
E	17	77	4.53	5.39	2.32
F	6	27	4.5	1.9	1.38
G	13	43	3.31	5.73	2.39

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	29.01	6	4.83	0.80	0.58	2.22
Within Groups	479.75	79	6.07			
Total	508.76	85				

Hypotheses

The null hypothesis was: H_o: There was no significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3, or site locations of the participants in the After School Academic Achievement Program (ASAP) as measured by the Benchmark Assessment Systems.

The three alternative hypotheses were: H_1: There was a significant difference in the pretest and posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP); H_2: There was a significant difference between grade levels in the pretest and posttest scores of students in Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP) and, H_3: There was a significant difference between site locations in the pretest and posttest scores of students in

Table 4

ANOVA Results for Grades 1, 2, and 3: Tests of Between Grades Effects

Groups	*Count*	*Sum*	*Average*	*Variance*	*STAN DEV*
GRADE 1	19	81	4.26	2.54	1.59
GRADE2	39	151	3.87	6.06	2.46
GRADE 3	28	147	5.25	7.45	2.73

ANOVA

Source of Variation	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
Between Groups	31.46	2	15.73	2.74	0.07	3.11

Grades 1, 2, and 3 as measured by the Benchmark Assessment Systems who participated in the After School Academic Achievement Program (ASAP).

A single factor ANOVA, as seen in Table 3 was used to determine (H_3) if there was a statistically significant difference between the reading scores of the participants in the ASAP program, as measured by the BAS assessment between the seven separate site locations. The ANOVA determined that there was no significant difference between the reading scores of the participants, from the seven separate site locations as seen in Table 3 ($F(6,79) = .80$, $p = .58$). Therefore, the null hypothesis must be retained that there is no significant difference in the reading scores of the participants who attended the ASAP program between site locations.

A single factor ANOVA was also used to determine if there was a statistically significant difference between the reading scores of the participants in the ASAP program, as measured by the BAS assessment between the participants in grade 1, grade 2, and grade 3 (H_2). As seen in Table 4, ANOVA determined that there was no significant difference between the reading scores of the participants, from the three grade groups as seen in $F(2,84) = 2.03$, $p = .07$. Therefore, the

Table 5

Paired t Test of all After School Academic Proficiency Program Participants

	POSTTEST	*PRETEST*
Mean	9.58	5.12
Variance	18.95	15.75
Observations	86	86
Pearson Correlation	0.83	
Hypothesized Mean Difference	0	
df	85	
t Stat	16.75	
P(T<=t) one-tail	5.8E-29	
t Critical one-tail	1.66	
P(T<=t) two-tail	1.16E-28	
t Critical two-tail	1.99	

null hypothesis must be retained that there is no significant difference in the reading scores of the participants who attended the ASAP program, between the three grade groups.

ANOVAs determined that there was not a significant difference between the pretest and posttest scores of the students who attended the ASAP program in Grade 1, 2, or 3 or between the seven separate site locations. Therefore, I was able to analyze the entire group as a whole to determine if the gains made by the students on the pretest and the posttest scores were statistically significant. A paired *t*-test was used to analyze the measure of gains on the pretest and posttest scores of the ASAP participants. Table 5 depicts the paired *t*-test.

The paired *t*-test is the most sensible test to use for this particular study because it measures two scores from the same participant, as in the pretest and posttest scores. The data from the paired *t*-test showed that there is a very strong, .83 correlation (Pearson Correlation), that the posttest scores are highly related to the pretest scores. A *t*-Stat score (16.75) greater than

two shows that there is a very large statistically significant effect. Therefore we must reject the null hypothesis and find that the ASAP program has a large effect on the reading scores of all the participants. Cohen's *d* was then used to determine the effect size.

Cohen's *d* is found by finding the mean difference between two groups, as in the pretest and posttest scores, and then dividing the result by the pooled standard deviation (Glass & Hopkins, 1996). Cohen's *d* allows us to determine the size of the effect. For Cohen's *d*, a *d* greater than .8 is considered to be large. An effect size of 1.6 means that there is less than one chance in 1000 that this *t*-score is reflecting random data. This tells you that the effect is very statistically significant.

Chapter Conclusion

The purpose of this quasi-experimental study was to determine the effects of the ASAP program on the reading scores of the participants as measured by pretest and posttest scores using the BAS assessment. This study found there were not any significant differences in reading achievement within grades or site locations. This supports research by MacKay (2007), that almost all children can be reached with the use of effective literacy practices. It did however, show that there was a large statistically significant effect in the gain of reading achievement from the pretest and posttest data by all of the students that participated in the ASAP program. These findings were very similar to the research study by Ransford-Kaldon, Flynt, and Ross (2011) that LLI is an effective intervention when used for populations that are deemed to be high-risk. This particular finding is promising news for all involved in the project, including district personnel, teachers, students, parents, and community stakeholders.

Descriptive and inferential statistics were employed to analyze the data. Additional tests were completed to determine if any particular grade had an advantage over another and if any one of the seven sites performed better than the others. Data was analyzed for the groups (grades

and sites) using ANOVA. Both results determined that the null hypothesis must be accepted and that there was no significant difference between the students in Grades 1, 2, or 3, or at any of the individual site locations. A paired *t*-test was then used to analyze the data. It found that the null hypothesis must be rejected and that there was a statistically significant effect between the pretest and posttest scores of all the participants that attended the ASAP program. Cohen's *d* was then used to determine the large effect size.

Chapter 5 will summarize the major results of this study, as well as to relate the findings to the literature. It will recognize the limitations of the study, and determine the implications for further research. It will conclude with the significance of the project and a summary of the study.

Chapter 5: Conclusion

The purpose of this study was to determine the efficacy of participation in the After School Academic Proficiency (ASAP) program in a Northern British Columbia school district on the reading scores of participants in Grades 1 to 3 from seven out of eight vulnerable school sites and if one grade or site location scored significantly higher. This was a quantitative study that employed a quasi-experimental research design. Pretest and posttest data were analyzed to determine any significant differences between grade levels and specific site locations.

A reading gain score was obtained for each participant in the ASAP program. Students were assessed on their reading using the Fountas and Pinnell Benchmark Assessment System (BAS) which is an integral part of the Fountas and Pinnell Leveled Literacy Intervention (LLI) system. Students that attended the ASAP program were given a pretest reading level score when they entered the program. LLI was the reading intervention that was used during the program. The LLI system used small-group guided reading lessons to provide targeted reading interventions. The students were then given a posttest at the end of the intervention. The reading gain score was the difference between the pretest and the posttest scores.

ANOVA was used to determine if there were any significant differences between the grade levels and site locations. ANOVA used between site locations determined that there was no significant difference between the reading scores of the participants, from the seven separate site locations as seen in Table 3 ($F(6,79) = .80$, $p = .58$). Therefore, the null hypothesis must be retained that there is no significant difference in the reading scores of the participants who attended the ASAP program between the separate site locations. The AVOVA between grade levels determined that there was no significant difference between the reading scores of the participants, from the three grade groups as seen in Table 4 ($F(2,84) = 2.03$, $p = ..07$). Therefore,

the null hypothesis must be retained that there is no significant difference in the reading scores of the participants who attended the ASAP program between the three grade groups.

Once it had been determined that there were no significant differences between grade levels or site locations, I was able to combine all of the students in the study to determine if there was a significant difference between the pretest and the posttest scores of the participants in the ASAP program. A paired *t* test was used for this particular study because it measures two scores from the same participant, as in the pretest and posttest scores. The data from the paired *t* test shows that there is a very strong, .83 correlation (Pearson Correlation), that the posttest scores are highly related to the pretest scores. A *t* Stat score (16.75) greater than two shows that there is a very large significant effect. Therefore we must reject the null hypothesis and find that the ASAP program has a large effect on the reading scores of all the participants. Cohen's d was then used to determine the effect size. The Cohen's d score was 1.6. Cohen's d allows us to determine the size of the effect. For Cohen's d, a d greater than .8 is considered to be large. An effect size of 1.6 means that there is less than one chance in 1000 that this t score is reflecting random data. This tells you that the effect of the reading achievement between the pretest and the posttest scores of the participants that attended the ASAP program is very significant.

In summary, the research determined that there was no significant difference between the grade levels or the site locations. This speaks to the quality of the program and the training that the teachers received. This is indicative of the research by Blazer (2016) that after school programs need to have high quality teachers and be in the neighborhoods where they can be accessed by the students that need it most. More importantly, the research finding that participation in the after school program has a large effect on the reading achievement of the participants is one that holds promise for the future.

Relationship of results to existing literature

This study adds to the existing literature on vulnerable children, poverty and trauma and their effects on learning, the achievement gap, reading interventions, the use of the Leveled Literacy Intervention system as an effective intervention, and the effectiveness of after school programs in supporting struggling learners. This research project reflects the current literature on the importance of identifying outside risk factors that may have a detrimental effect on a child's ability to learn. The population sample was obtained from the seven Community Link schools that have the highest population of vulnerable students within the school district. That is to say, that there is a high probability that many of the participants in the ASAP program could be deemed vulnerable according to the Early Development Inventory (EDI). The EDI assesses children in Kindergarten and analyzes waves of data that are used to measure school readiness, but also to identify students that are deemed to be vulnerable, as in not ready for school (Muhajarine, Puchala, & Janus, 2011). All of the staff members that teach in the Community Link schools are trained to be trauma-informed (Blitz, Anderson, & Saastamoinen, 2016). Poverty and trauma are among some of the factors that can be predictors of vulnerability, but also can impede a child's ability to learn (Jensen, 2009; Hawley, 2000). An achievement gap can occur as a result of a number of factors, including minority populations and risk factors that vulnerable students may have been exposed to. It can also occur as a result of poverty (Reardon, 2011). However, according to Leu & Maykel (2016), currently the achievement gap caused by socio-economics is double the achievement gap based on race. This research project suggests that the participation in the ASAP program using the LLI can support students in their reading development in the primary years.

This research is also complimentary to the research on schools providing interventions to support their struggling learners and vulnerable populations. There are many models and systems

of intervention that schools can employ to provide reading interventions and this project supports the research from Partanen and Siegel (2014) that early intervention is necessary to combat the number of students who struggle with reading. What works for one school may not work for another based on the demographics of the student population. The intervention tool used in this study was the LLI system. This study supported the findings in other research studies that LLI is an effective intervention for high risk populations (Ransford-Kaldon, Flynt, & Ross, 2011). Finally, the research in the project supports the current literature on the efficacy of after school programs on raising the academic achievement of the students as well as the need for after school programs as a tool for closing the achievement gap (Bayless et al., 2018).

Limitations of the study

There were a number of limitations associated with this study. The first limitation is the sample size and population. It was a relatively small sample size with all students coming from the same school district and all attending Community Link schools. The generalizability of this study to the larger population of struggling readers in Grades 1, 2, and 3 who attend after school programs may be impacted due to the fact that a convenience sample was used. The lack of random sampling was also a limitation. Random sampling was not possible for this particular study. Separating the students by other factors such as gender or ethnicity would also have allowed for fewer variances in the data. There also was no control group for this study. More information may have been determined if there was a sample of Grade 1, 2, and 3 struggling readers who did not attend the ASAP program to compare the gains of each group. However, it must be stated that if a control group was to be used they must also be given the opportunity to attend the ASAP program after the evaluation of the study because withholding a treatment would be considered unethical. The study also only looked at the effects of the intervention on

students in Grade 1, 2, and 3. The second limitation of the study examines whether all of the reading gains can be attributed to receiving intervention in the ASAP program. It does not take into account that they may have reading gains due to maturation or outside of school influences.

Implications for future research

This study added to the literature on after school programs as an avenue to support young struggling readers using LLI. There has been a number of studies on after school programs that claim improvement in academic achievement due to increased self-esteem and fewer behavior problems. The study by (Hirsch B. , Hedges, Stawicki, & Mekinda, 2011), found that participants in the program had a more positive outlook on school and missed fewer days than students who did not attend the program. They also reported that they were able to self-regulate better and had fewer problem behaviors. If this project were to be replicated, I would want to include a student school satisfaction survey to be completed during the pretest and posttest to see if there was a change in student's attitude towards school during the intervention period. It also added to the literature on the use of the Fountas and Pinnel LLI as a reliable intervention for struggling readers and the use of the BAS as a reliable measure for assessing student's reading levels. However more research needs to be done on the effects of the LLI on other grade levels. Many students made significant gains in reading while in the ASAP program. A deeper investigation into those students who did not make gains while attending school and the ASAP program. Further studies are also needed to determine the long term effects of the ASAP program on the participants. For example, assessing their reading level in Grade 8 and the graduation rate of ASAP participants.

Overall significance of the study

This study contributed to the academic research on the efficacy of an after school program in raising the reading scores of its participants using LLI. The research project validates the decision of the school district in implementing the ASAP program in Community Link schools to support struggling readers in Grades 1 to 3 and provides the school district with powerful data to support their decision. The analysis of the data from this project is useful for other school districts who are seeking new initiatives to support their vulnerable learners. It is also useful for other educators who may be developing their own reading intervention programs. The LLI was recently brought into classrooms at the Community Link schools in this Northern British Columbia school district and teachers are required to service their three lowest readers in the class using the LLI system. This project provides educators with evidence that using the LLI has a significant effect on struggling readers within Community Link schools.

The retention of the null hypothesis for the significance between the grade levels and the significance between the separate site locations speaks to the quality training that the ASAP teachers received and the quality of their ability to deliver the program. If there were significant negative or positive site differences it may have required further investigation into that particular site location. The lack of a significant effect between grade levels also reinforces the student selection process. If one grade had significant negative or positive differences over the other, it may have required further investigation into the student selection process.

The analysis of the data from this study could also provide the students, parents, and community, with evidence that the program does in fact have an impact on the reading.

This study also brings light to the issues facing students that impede their ability to learn within the school setting. Vulnerability, poverty, and trauma all have a detrimental effect on a child's cognitive abilities. While the school district continues to develop programs to support

vulnerable populations, the issues that students face are often out of control of the school. This study lends itself to the need for government to step forward and support families to eliminate the achievement gap. Providing early intervention and support for our struggling learners could in fact change the trajectory of their life and give them the opportunity to succeed as a contributing member of society by allowing them to pursue postsecondary education or join the workforce.

Recommendations

Bouffard et al. (2006) recommended that after-school programs must be run in neighborhood schools so that students who need these programs the most have equal access. At-risk youths, who would most benefit from an after-school program, often participate less in them than their more-advantaged peers (Bouffard et al., 2006). Based on the research findings of this study, I would recommend that the ASAP program continue to provide services to meet the needs of our most-vulnerable learners in our Community Link Schools.

To test the validity of a research project, it is important to replicate the study to see if it would be the same for a different population of participants. This study only included data from 86 participants which is a relatively small sample size. I would suggest that the scores from the 2018-2019 ASAP participants be used to replicate the study to determine if there were any statistically-significant differences in the effects of the ASAP program on the reading achievement of the participants from both groups.

If the study were to be replicated, I would recommend that a control group be used to determine statistically-different significances between the control group that did not receive an intervention and the ASAP group participants that did receive the intervention. I would also

recommend adding additional variables to the ANOVA such as gender or race. Additional variables may reduce the amount of variance between groups which could alter the effect results.

The ASAP program also has a Math intervention component. I would recommend that pretest and posttest scores of the students' math scores be analyzed as well according to the same study model to determine if the ASAP program had a statistically-significant effect on the math achievement of the participants.

An evaluation of the After-School Matters Program found that participants in the program had a more positive outlook on school and missed fewer days than students who did not attend the program. They also reported that they were able to self-regulate better and had fewer problem behaviors (Hirsch, Hedges, Stawicki, & Mekinda, 2011). Another study also found that the children who regularly attended the after-school program did better on standardized math tests, and teachers reported an improvement in their work habits and social skills with their peers as compared to students not involved in an after-school program (Vandell, Reisner, & Pierce, 2007).

I would recommend a mixed-methods study be completed that included a student school satisfaction survey completed by the participants at the beginning of the program and the end of the program to explore if the ASAP program had an effect on the self-esteem or social-emotional well-being of the participants. A teacher questionnaire could also be included to explore if the ASAP program had an effect on the behaviour or study habits of the participants in the classroom. The data obtained from the Early Development Inventory (EDI) could be used to target potential ASAP participants.

Conclusion

This study aimed to determine if participation in the ASAP program had a significant effect on the reading achievement of the participants and if one grade level or site location had an advantage over the others. The study utilized the pretest and posttest scores of the participants as measured by the BAS assessment to determine gains in reading achievement. LLI was the reading intervention that was employed for the study. All of the students involved in the study were struggling readers that attended Community Link schools which have the highest percentage of vulnerable students attending. Analysis of the data proved that participation in the ASAP program had a large effect on the reading scores of the participants, regardless of grade or location. The research defined the importance of high quality after school programs being available to support the needs of struggling readers by providing targeted and early interventions. While the future of the journey is still uncertain, it reaffirms that we are on the right path.

References

Afterschool Alliance. (2014). *Taking a deeper dive into afterschool: positive outcomes and promising practices.* Retrieved from http://afterschoolalliance.org/documents/deeper_dive_into_afterschool.pdf

American Insitude for Research. (2013). *Texas 21st century community learning centers year 2 evaluation report.* Retrieved from http://blogs.edweek.org/edweek/time_and_learning/Texas%2021st%20CCLC%20Year%202%20Interim%20Evaluation%20Report%20%28March%202013%29.pdf

Bayless, S. D., Jenson, J. M., Richmond, M. K., Pampel, F. C., Cook, M., & Calhoun, M. (2018). Effects of an afterschool early literacy intervention on the reading skills of children in public housing communities. *Child Youn Care Forum*, 537-561.

Blazer, C. (2016). After-school academic enrichment programs. *Information Capsule Research Services, 1509*, 1-16.

Blitz, L. V., Anderson, E. M., & Saastamoinen, M. (2016). Assessing perceptions of culture and trauma in an elementary school: informing a model for cultureally responsive trauma-informed schools. *Urban Review: Issures and Ideas in Public Education, 48*(4), 520-542.

Bouffard, S. M., Wimer , C., Caronongan, P., Little, P. M., Dearing, E., & Simpkins, S. D. (2006). Demographic differences in patterns of youth out-of-school time activity participation. *Journal of Youth Development, 1*(1).

Bradley, B., & Greene, A. C. (2013). Do health and education agencies in the United States share responsibility for academic achievement and health? A review of 25 years of evidence about the relationship of adolescents' academic achievement and health behaviors. *Journal of Adolescent Health, 52*(6), 523-532.

Buckingham, J., Wheldall, K., & Beaman-Wheldall, R. (2014). Evaluation of a twp-phase implementation of a tier-2 (small group) reading intervention for young low-progress readers. *Australian Journal of Special Education, 38*(2), 169-185.

Cain, K., & Oakhill, J. (2011). Matthew effects in young readers reading comprehension and reading experience aid vocabulary development. *Journal of Learning Disabilities*, 431-443.

Caro, D. H., McDonald, J. T., & Willms, J. D. (2009). Socio-economic status and academic achievement trajectories from childhood to adolescence. *Canadian Journal of Education, 32*(3), 558-590.

Center for Research in Educational Policy. (2009-2010). *Implementation of effective intervention: An empirical study to evaluate the efficacy of Fountas & Pinnell's leveled literacy intervention system (LLI).* Memphis, TN: The University of Memphis.

Cohodes, S. (2018). Charter schools and the achievement gap. *The Future of Children* , 1-20.

Collins, J. (2015). Migration, language diversity and education policy: A contextualized analysis of inequality, risk and state effects. *Policy Futures in Education, 13*(5), 577-595.

Creeden, K. (2009). How trauma and attachment can impact neurodevelopment: informing our understanding and treatment of sexual behaviour problems. *Journal of Sexual Aggression, 15*(3), 261-273.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research (4th ed.).* Boston, MA: Pearson Education, Inc.

Cutillo, M. (2013). Poverty's prominent role in absenteeism. *Education Week, 32*(22), 22-23.

D'Angiulli, A., Warburton, W., Dahinten, S., & Hertzman, C. (2009). Population-level associations between preschool vulnerability and grade-four basic skills. *PLoS One, 4*(11).

District Achievement Contract 2014-2017. (2018, September). Retrieved from School District 57 (Prince George): https://www.sd57.bc.ca/Documents/2014.07.15%20District%20Achievement%20Contract%202014.pdf

Dubow, E., & Ippolito, M. F. (1994). Effects of poverty and quality of the home environment of changes in the academic and behavioral adjustment of elementary school-age children. *Journal of Clinical Child Pyschology, 23*(4), 401-412.

Duncan, G., & Murnane, R. (2014). Meeting the education challenges of income equality. *Phi Delta Kappan, 95*(7), 50-54.

Education Cities. (2016). Education equality in America: Comparing the achievement gap across schools and cities. *Education Cities*, 111-112.

Evans, R. (2005). Reframing the achievement gap. *Phi Delta Kappan, 86*(8), 582-589.

Ferguson, H. B., Boivard, S., & Mueller, M. P. (2007). The impact of poverty on the educational outcomes for children. *Peaediatric Child Health, 12*(8), 701-706.

Fountas, I. C., & Pinnell, G. S. (2009). *When readers struggles: Teaching that works.* Portsmouth, NH: Heinemann.

Fountas, I., & Pinnell, G. S. (2017). *Fountas and Pinnell Literacy elevating teacher expertise*. Retrieved from http://www.fountasandpinnell.com/

Framework for Enhancing Student Learning 2017-2021. (2018, October). Retrieved from School District No. 57 (Prince George): https://www.sd57.bc.ca/Documents/2018.06.19%20Approved%20Framework%20for%20Enhancing%20Student%20Learning.pdf#search=Framework%20for%20enhancing%20students%20learning

Frost, J., & Sorensen, P. M. (2007). The effects of a comprehensive reading intervention programme for grade 3 children. *Journal for Research in Reading, 30*, 270-286.

Gardner, H. (2000, October 19). *"Paroxsyms of Choice"*. Retrieved from New York Review of Books: https://www.nybooks.com/articles/2000/10/19/paroxysms-of-choice/

Gelling, L. (1999). Role of the reserach ethics committee. *Nurse Education Today, 19*(7), 564-589.

Glass, G. V., & Hopkins, K. D. (1996). *Statistical methods in Education and psychology(3rd ed.).* Needham Heights, MA : A Simon and Schuster Co.

Harlaar, N., Dale, P. S., & Plomin, R. (2007). From learning to read to reading to learn: substantial and stable genetic influence. *Child Development, 78*(1), 116-131.

Harvey, M. W. (2011). Union county public schools action research: comparing early literacy interventions used in union county public schools; reading recovery vs. leveled literacy intervention. Matthews, NC: Wingate University.

Hawley, T. (2000). *Starting smart: How early experiences affect brain development (2nd ed.).* New York, NY: Ounce of Prevention Fund and ZERO TO THREE.

Heinemann. (2012). *Field study of reliability and validity of the Fountas and Pinnell Benchmark Assessment Systems 1 and 2*. Retrieved from https://www.heinemann.com/fountasandpinnell/research/basfieldstudyfullreport.pdf

Hirsch, B., Hedges, L., Stawicki, J., & Mekinda, M. (2011). *After-school programs for high school students-an evaluation of after school matter.* Evanston, IL: Northwestern University.

Holliday, M. R., Cimetta, A., Cutshaw, C. A., Yaden, D., & Marx, R. W. (2014). Protective factors for school readiness among children in poverty. *Journal of Education for Students Placed at Risk, 19*(3-4), 125-147.

Human Early Learning Partnership. (2016). *EDI (Early Years Development Instrument) report wave 6 community profile, 2016. Prince George (SD57).* Vancouver, B.C.: University of British Columbia, School of Population and Public Health.

Jalongo, M., & Sobolaki, M. (2010). Supporting young children's vocabulary growth: The challenges, the benefits, and evidence-based strategies. *Early Childhood Education, 38*, 421-429.

Janus, M., Zeraatkar, D., Duku, E., & Bennett, T. (2018). Validation of the early development instrument for children with special health needs. *Journal of Paediatrics and Child Health*.

Jensen, E. (2009). *Teaching with poverty in mind: what being poor does to kids brains and what schools can do about it.* Alexandria, VA: ASCD.

Kellett, M., & Dar, A. (2007). *Children researching links between poverty and literacy.* York, UK: Joseph Rowntree.

Klest, B. (2012). Childhoos trauma, poverty, and adult victimization. *Psychological Trauma: Theory, Research, Practice, and Policy, 4*(3), 245-251.

Ktunaxa, M. (2011). An Indigenous knowledge perspective on valid meaning making: A commentary on research with the EDI and Aboriginal Communities. *Social Indicators Reserach, 103*(2), 315-325.

Lapointe, V. R., Ford, L., & Zumbo, B. D. (2007). Examining the relationship between neighborhood environment and school readiness for kindergarten children. *Early Education and Development, 18*(3), 473-495.

Leu, D., & Maykel, C. (2016). Thinking in new ways and in new times about reading. *Literacy Research and Instruction, 55*(2), 122-127.

MacKay, T. (2007). *Achieving the vision the final research report of the West Dunbartonshire literacy initiative.* Dumbarton: West Dunbartonshire Council.

Morrissey, T. W., Hutchison, L., & Winsler, A. (2014). Family income, school attendance, and academic achievement in elementary school. *Developmental Psychology, 50*(3), 741-753.

Muhajarine, N., Puchala, C., & Janus, M. (2011). Does the EDI equivalently measure facets of school readiness for aboriginal and non-aboriginal children. *Social Indicators Research*, 299-314.

Murphy, J. F., & Tobin, K. J. (2011). Homelessness comes to school: how homeless children and youths can succeed. *Phi Delta Kappan, 93*(3), 32-37.

Naftzger, N., Manzeske, D., Nistler, M. J., & Swanlund, A. (2013). *Texas 21st century community learning centers: Year Two evaluation report.* Austin, TX: American Institutes for Research.

National Research Council. (2008). *Early childhood assessment what why and how.* Washington, DC: The National Academies Press.

Okilwa, N. S. (2016). Exploring school- and home-related protective factors for economically disadvantaged middle school students. *Journal of At-Risk Issues, 19*(1), 34-46.

Olson, R., Keenan, J. M., Byrne, B., & Samuelsson, S. (2014). Why do children differ in their development of reading and related skills. *Scientific Studies of Reading, 18*(1), 38-54.

Partanen, M., & Siegel, L. S. (2014). Long-term outcome of the early identification and intervention of reading disabilities. *Reading and Writing, 27*(4), 665-684.

Pillay, J. (2017). The relationship between housing and children's literacy achievement: implications for supporting vulnerable children. *South African Journal of Education, 37*(2), 1-10.

Porter, A. (2007). *Rethinking the achievement gap.* Philadelphia, PA: University of Pennsylvania Graduate School of Education.

Ransford-Kaldon, C., Flynt, E. S., & Ross, C. (2011). *A randomized controlled trial of a response-to-intervention (RTI) tier 2 literacy program: leveled literacy intervention (LLI).* Evanston, IL: Society for Research on Educational Effectiveness.

Reardon, S., Valentino, R., & Shores, K. (2012). Patterns of literacy among US students. *The Future of Children, 22*(2), 17-37.

Ridgard, T., Laracy, S. D., DuPaul, G. J., Shapiro, E. S., & Power, T. J. (2015). Trauma-informed care in schools: a social justice imperative. *Communique, 44*(2).

School District No. 57 Strategic Plan 2016-2021. (2018, October). Retrieved from School District No. 57 (Prince George): https://www.sd57.bc.ca/Documents/2017.05.30%20Approved%20Strategic%20Plan.pdf#search=strategic%20plan

Sharkins, K., Leger, S. E., & Ernest, J. M. (2017). Examining effecrs of poverty, maternal depression, and children's self-regulation abilities on the development of language and cognition in early childhood:an early head start perspective. *Early Childhood Education Journal*, 493-498.

Snowling, M., & Hulme, C. (2011). Evidence based interventions for reading and language difficulties: Creating a vicious circle. *British Journal of Educational Psychology, 81*(1), 1-23.

Spann, M. N., Mayes, L. C., Kalmar, J. H., Guiney, J., Womer, F. Y., Pittman, B., . . . Blumberg, H. P. (2011). Childhood abuse and neglect and cognitive flexibility in adolescents. *Child Neuropsycology, 18*(2), 182-189.

Stanovich, K. (2009). Matthew effects in reading: Some consequences of individual differences in the acquisition of literacy. *Journal of Education, 189*(1-2), 23-55.

Statistics Canada. (2018, November). *Family Violence in Canada: A statistical profile 2015 2017*. Retrieved from Statistics Canada: https://www150.statcan.gc.ca/n1/pub/85-002-x/2018001/article/54978-eng.htm

Taylor, L. (2017). *The effects of leveled literacy intervention for students in the RTI process.* Minneapolis, MN: Walden University.

Tienken, C. (2012). The influence of poverty on achievement. *Kappa Delta Pi Record, 48*(3), 105-107.

Vandell, D. L., Reisner, E. R., & Pierce, K. M. (2007). Outcomes linked to high-quality afterschool programs: longitudinal findings from the study of promising afterschoo programs. *Policy studies associates Inc.*

Vaughn, S., Klingner, J., Swanson, E., Boardman, A., Roberts, G., Mohammed, S., & Stillman-Spisak, S. (2011). Efficacy of collaborative strategic reading with middle school students. *American Educational Research Journal, 48*(4), 938–964.

Wadsworth, M. E., Raviv, T., Reinhard, C., Wolff, B., Santiago, C., & Einhorn, L. (2008). An indirect effects model of the association between poverty and child functioning: the role of children's poverty-related stress. *Journal of Loss and Trauma, 13*(1), 156-185.

Welch, J. A., Nix , R. L., Blair, C., Bierman, K. L., & Keith, E. (2010). The development of cognitive skills and gains in academic school readiness for children from low-income families. *Journal of Educational Psychology, 102*(1), 43-53.

West, M., Ainscow, M., Wigelsworth, M., Troncoso, P., Education Endowment Foundation (EEF), & University Of Manchester, U.K.M.I of E (MIE). (2017). *Challenge the Gap: Evaluation Report and Executive Summary.* London, UK: Millbank.

What Works Clearinghouse. (2017). *WWC intervention report.* Retrieved from https://ies.ed.gov/ncee/wwc/

White, M. (2016). *Poverty and education: A teacher's perspective.* Vancouver: BC Teacher's Federation. Retrieved from BCTF : https://www.bctf.ca/uploadedfiles/public/publications/researchreports/2012-ei-01.pdf

Wilson, D. M. (2012). Struggling in suburbia. *Teaching Tolerance*(42), 40-43.

Appendix A. Letter to the School District

[redacted]
District Principal of Strategic Plan and Data Management
[redacted]
RE: Examining reading scores of primary students attending an after school academic proficiency program in inner city schools in Northern British Columbia.

[redacted]

My name is Sherrie Douglas and I am a Master of Education in Multidisciplinary Leadership student at the University of Northern British Columbia working under Dr. Andrew Kitchenham – School of Education Professor. I am currently pursuing a final project on investigating the effectiveness of an after-school program in raising reading awareness. I am writing to you to obtain permission to access and use the 2017-2018 pre- and post-reading data from all eight Tier 1 and 2 schools that are participating in the ASAP (After School Academic Proficiency) program.

My interest in this research project comes from my practice as a teacher in [redacted] At the first staff meeting of the 2017-2018 school year, the staff was informed of School District Data that 50% of Grade 2 students were not meeting expectations in reading. While this news was discouraging, it was also promising that the School District had implemented plans in response to this through CAIS and ASAP.

I would like to have to opportunity to analyze this data quantitatively to understand the effectiveness of one after-school reading program. I am requesting access to the anonymized pre- and post-reading data of students that were in the ASAP program in the 2017-2018 school year as it was the first year of implementation and will have complete pre and post test scores for each of the participants. Data will be confidential as I will be the only person who has access to the anonymized scores, and findings will be reported out in the aggregate. Any printed data will be housed in a locked cabinet when not in use and then destroyed once the project is completed. Electronic data will be kept for five years after the successful completion of my MEd project so that I and my supervisor could present the findings in learned venues such as conferences, journal articles, and books. After that time, all electronic data will be file deleted.

I hope that I will be able to make recommendations from my quantitative analysis and literature review that would benefit and inform the School District, students, and educators. Aboriginal Education boards as well as parents of students may also be interested in the results and recommendations from this research study. It will also add to the current literature on the efficacy of after-school programs in raising reading scores. This research study does not involve human participants and minimal risk is anticipated. At the time of writing, my supervisor, Dr. Andrew Kitchenham, has requested clarification as to whether Research Ethics Board review is necessary.

I look forward to hearing from you soon. I would like to get started on this project in the upcoming month. Thank you for your consideration and time. If you have any questions, please do not hesitate to contact me or Dr. Andrew Kitchenham

Sincerely,
Sherrie Douglas

Appendix B. School District Research Approval

PART E - Approval of Terms and Conditions

(to be completed by District Principal of- LEARNING INNOVATIONS [redacted]

[redacted]

The Prince George School District approves the terms and conditions of this agreement under which the district grants access to the researcher.

The expiry date for access to the records listed in Part C is: 04/30/2019

Signature: [redacted]

Position District Principal, Learning Innovations

This agreement provides district approval to proceed with your project. "District approval" allows the researcher to approach principals and subsequently teachers to request their permission to conduct research in their school/classroom. Your next step will be to contact the principal of the schools listed below to set up a meeting to discuss your project and obtain their permission to undertake the project in their school.

School(s): [redacted]

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Appendix C. School District Research Contract

Name: Sherrie Douglas Ph: [redacted]

Email: [redacted]

Title: The Efficacy of after school programs in raising reading scores.

Brief Description of Project: Project will look at the ASAP program to determine if it in fact raised reading scores. Also by gender/grade/site.

Timeline: Complete by April 1, 2019.

Approval of UNBC Ethics Committee or other Governing Body _____ Date: _____ Ethics not needed as data will be anonymized.

To be filled in by District Principal of Learning Innovations

Research not involving direct student contact

☑ Have FOIPOP issues been addressed? (student data – names removed etc.)

☐ Specific school involvement? Which ones? Venturing Schools (8)

Research involving direct student contact

Type of student involvement – survey/interview/observation/video/other: None

☐ Is a copy of the survey/questionnaire included?

☐ Are the questions appropriate? Any controversial items? _____

☐ Have FOIPOP issues been addressed – confidentiality of information protected?

☐ Has a criminal record check (required for volunteers) been completed?

☐ Any teacher/administrator involvement needed? Describe: _____

☐ Has a copy of the student/parent permission letter been included?

Age group/grade(s) 1-3 Number of students 100 at most

Schools Venturing schools

Decision Process

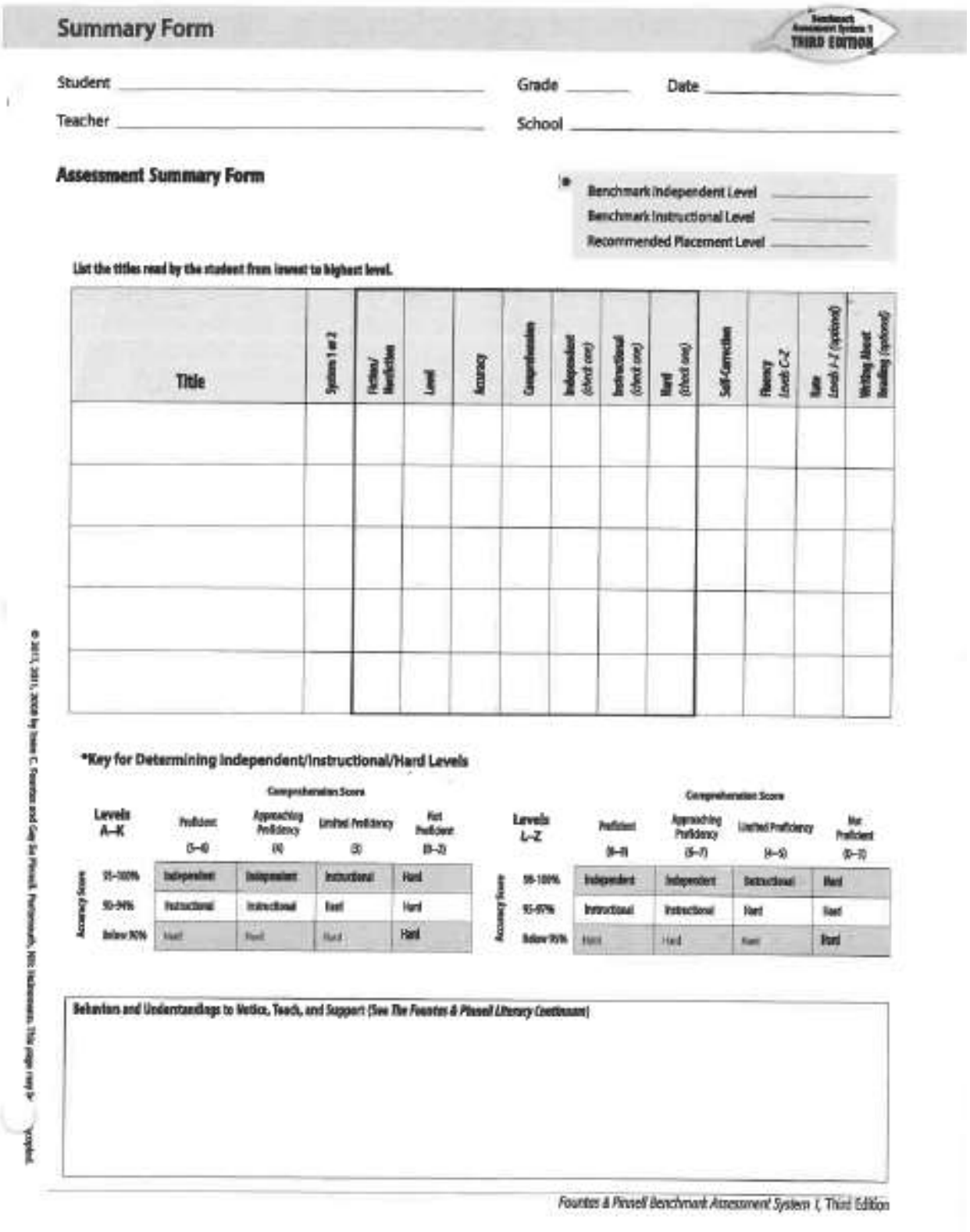
☑ Meeting with researcher.
☑ Project meets guidelines.
☐ Referral to Education Programs and Planning Committee (if needed)
☐ Referral to Board of School Trustees needed (if needed)

District Approval given: [redacted] Date: Feb. 1, 2019

"District approval" allows researcher to proceed to approach principals and teachers to request their permission to conduct research in their school/classroom. Researchers must understand that circumstances may not be appropriate and that schools/administrators have the final decision.

A copy of the completed research will be provided upon request to the district.

Appendix D. Fountas and Pinnell Benchmark Assessment



Summary Form

Fountas & Pinnell Benchmark Assessment System 1 THIRD EDITION

Student _____ Grade _____ Date _____

Teacher _____ School _____

Assessment Summary Form

Benchmark Independent Level _____

Benchmark Instructional Level _____

Recommended Placement Level _____

List the titles read by the student from lowest to highest level.

Title	System 1 or 2	Fiction/ Nonfiction	Level	Accuracy	Comprehension	Independent (check one)	Instructional (check one)	Hard (check one)	Self-Correction	Fluency Levels C–Z	Rate Levels J–Z (optional)	Writing About Reading (optional)

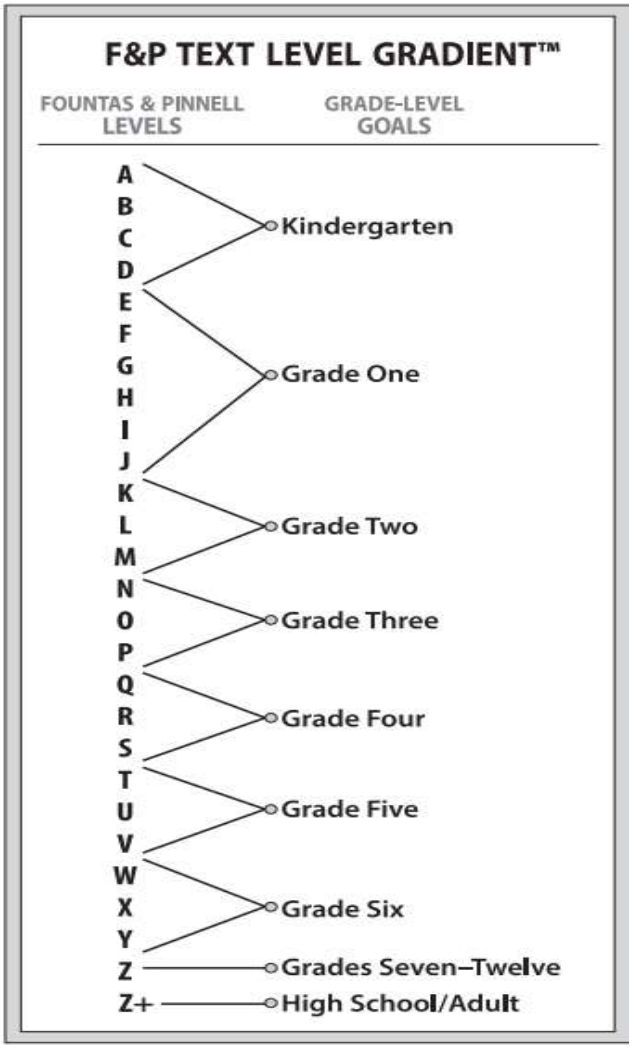
*Key for Determining Independent/Instructional/Hard Levels

Levels A–K	Comprehension Score: Proficient (5–6)	Approaching Proficiency (4)	Limited Proficiency (3)	Not Proficient (0–2)
Accuracy Score 95–100%	Independent	Independent	Instructional	Hard
90–94%	Instructional	Instructional	Hard	Hard
Below 90%	Hard	Hard	Hard	Hard

Levels L–Z	Comprehension Score: Proficient (6–8)	Approaching Proficiency (5–7)	Limited Proficiency (4–5)	Not Proficient (0–3)
Accuracy Score 98–100%	Independent	Independent	Instructional	Hard
95–97%	Instructional	Instructional	Hard	Hard
Below 95%	Hard	Hard	Hard	Hard

Behaviors and Understandings to Notice, Teach, and Support (See *The Fountas & Pinnell Literacy Continuum*)

Appendix E. Fountas and Pinnel Text Level Gradient



The grade-level goals on the F&P Text Level Gradient™ are intended to provide general guidelines, which should be adjusted based on school/district requirements and professional teacher judgement.